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REPORT No VL-5515-D-1

AMMUNITION RELIABILITY INFORMATION SYSTEM

ARIES USERS' MANUAL

A.P. TRIPPE P.J. DONOVAN CALSPAN CORPORATION

JUL<sub>.</sub>Y 1975



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FOR

AMMUNITION SYSTEMS RELIABILITY & SAFETY DIVISION PRODUCT ASSURANCE DIRECTORATE PRODUCT ASSURANCE DIRECTORATE DOVER, NEW JERSEY 07801

WORK PE THE UNDER CONTRACT NUMBERS



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DOVER, NEW JERSEY 07801

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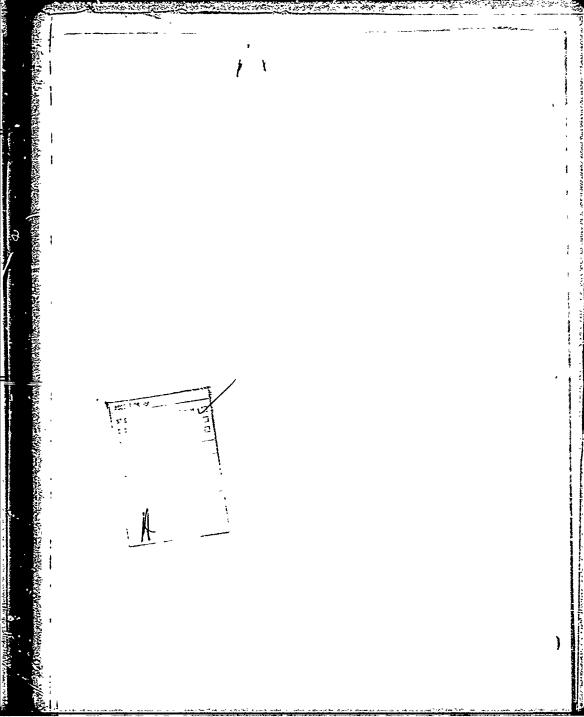
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## FOREWORD

This Users' Manual has been prepared by Calspan Corporation as partial fulfillment of the requirements specified in Picatinny Arsenal Contracts DAAA21-74-C-0403 and DAAA21-74-C-0492. Technical guidance and assistance at Picatinny was provided by George Covington, Geza Pap, and Sheldon Rachlin of the Ammunition Systems Reliability and Safety Division, PAD. The authors wish to acknowledge with gratitude the considerable contributions made by these gentlemen during the design and development phases of this work. Responsibility for any errors or omissions and for the opinions expressed is solely the authors.

# AMOUNTION RELIABILITY INFORMATION EVALUATION SYSTEM ARIES

# Users' Manual

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## ii. HOW TO USE THIS MANUAL

ARIES is an acronym for Ammunition Reliability Information Evaluation System. ARIES is a group of data bases and retrieval/analysis capabilities. A user may retrieve data from one or more data bases and then statistically analyze and graphically display that data. Data base access can be either interactive or batch and analysis/display functions are batch operated.

The following documentation symbols are used throughout the manual\*:

- The enclosed item is user supplied.
- The enclosed item is mandatory. When more than one choice is shown, the user must pick one.
- The enclosed item is optional and has a default setting if no user option is declared.

  - Underlined statements indicate a system response to a command.

These symbols do not appear as actual commands or output. They are documentation conventions only.

All commands which retrieve data end in a %. For example:

PRINT MEAN VEL WHERE LOT EQ MA-012-036%

These symbols are also applicable to the System 2000 Reference Manual. The more advanced user may desire to consult this manual for intricate, special purpose retrieval instructions.

# Also, all lot numbers are in the form:

AAA-000-000

OR

AA-000-000

so that MA-1-1 becomes MA-001-001. The request for data concerning lot number MA-1-1 will result in the message "0-data sets selected" unless the lot number is specified in the correct format. This rule also applies to component lot numbers.

A dictionary of common data base terms and acceptable values for specific data elements has been provided as an aid in using this manual. Users not familiar with data base nomenclature are urged to review the definitions therein.

## INTRODUCTION

This project has developed a data retrieval storage and analysis system which manages performance and test data collected during manufacture and acceptance testing of complete rounds, components, subassemblies, propellants, and fuzes. The set of data files with their retrieval functions and analysis capabilities is referred to as the Ammunition Reliability Information Evaluation System, ARICS. It is expected that ARIES will be useful in evaluating developmental programs, in trouble-shooting problems as they arise and in performing reliability assessments.

Data access can be performed in both the interactive and batch modes. Interactive data access is useful when a user requires a quick, short answer to a question with little or no analysis. Data retrieved interactively is displayed on the screen or teletype. Batch processing of ARIES jobs allows for retrieval of several, large groups of data and for detailed analysis and display of that data. A

## II. DATA BASE STRUCTURE

ARIES is a special purpose data base structure and data analysis system designed for use by engineering personnel for the storage and analysis of data pertaining to several broad areas of armaments design and production. Component lot assembly data, ballistic and static component test data, and complete round ballistic acceptance test data for artillery, mortar and rocket ammunitions are managed within the ARIES structure. This section will describe-from the user's point-how to access and analyze data.

## ARIES OVERVIEW

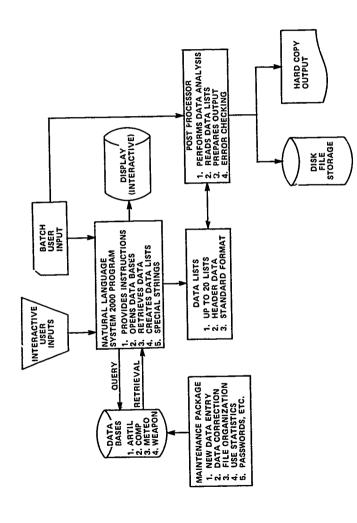
ARIES utilizes System 2000 (S2K), a general purpose data base management system, developed and marketed by MRI Systems Corporation, Austin, TX. In order to retrieve data which is meaningful and correctly categorized for analysis, it is necessary for the user to understand some of the basic concepts of how the data is formatted and how to structure retrieval commands. The following pages provide an abbreviated discussion of many of the data manipulation concepts which underlie the S2K data management programs. For a more in-depth discussion of these topics the user is referred to the System 2000 Reference Manual.

ARIES operates on the CDC-6600 computer at Picatinny Arsenal. The data base, the retrieval functions, and the analysis programs all reside on disc files. Program examples in the manual will also provide the control cards necessary to activate these programs.

Figure 1 shows the structure of the Ammunition Reliability Information Evaluation System. User inputs are entered either interactively at a teletype (or screen) or batch in the form of a deck of punched cards. These inputs are interpreted by an S2K natural language program which (i) opens the data base, (ii) retrieves data, (iii) creates formatted data lists, and (iv) provides informational aids to the interactive user. Data bas are maintained

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THE AMMUNITION RELIABILITY INFORMATION EVALUATION SYSTEM Figure 1

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as disc files and are accessible to the typical user in the read only mode. Updates and structure changes are performed by use of a maintenance package accessible to those who need it (details for using these programs are provided in the ARIES System Programming Manual). Interactive users receive their data immediately on the device at which they are working. Data lists can be created in the interactive mode and cataloged for future processing. Batch users create formatted data groups (up to a maximum of twenty) which are then read as input to a post processor which provides statistical analyses and graphical displays of the data by groups.

## DATA BASE DEFINITIONS

A data base definition is a list of all the data items of interest in a logical structure which aids the user in data retrieval. The definition shows the relationships between each data item and all others in the data base. The basic components of the definition are data elements and repearing groups. Values are stored in data clements. Repeating groups describe a structure for storing multiple sets of values and also serve to link hierarchial levels of the definition.

At this point, let us use the data base ARTIL as an example. The definition for ARTIL can be found in the Appendix section of this manual. Each data item in ARTIL has a component number and a component name. Component number one (C1) is named caliber. The information following the component name defines the format in which that piece of information is stored. Elements are either key or non-key (if not specified in the definition an element is key by default). Elements are typed as name, text, integer, decimal, date, or money with varying lengths (e.g. name X(10) is a ten-character name or integer 9(6) is a six-digit number). These element formats have little effect on the retrieval process and, therefore, will not be discussed in detail. It is sufficient to state that only numeric elements may be processed by the analysis routines. That is to say that it is incorrect to request a mean and standard deviation of the lot numbers and if this occurs, a processing error will result.

## REPEATING GROUPS

The definition for ARTIL is indented at several points. Each indentation signifies a repeating group level. It is the repeating group concept that allows multiple occurrences of data set information and associated elements and/or associated lower level repeating groups. These associations are always specified within the component description. Elements and repeating groups are always members of some repeating group, thus the repeating group relationship is as shown for the ARTIL definition. Figure 2 is the repeating group structure for ARTIL. Notice how the data for a lot of amountion is clustered at each level. Level zero is the basic lot data and at this level the repeating group relationship is not specified but implicitly related to component number zero which is referred to as ENTRY. For all non-level zero elements the repeating group specification is explicit and shows in the definition.

In ARTIL, there are four repeating groups on level one as shown. Four more exist at level two, three at level three and two at level four. This repeating group structure is the means by which data can be retrieved from any branch of the data tree without a sequential search of the entire data base.

#### 4. DATA STRUCTURE

Let us now look at how the values for a specific lot of ammunition would fit into the ARTIL structure. Figure 3 illustrates typical data value storage in ARTIL. KN-816-095 is 37,125 rounds of 105mm, HE, M1 ammunition which were tested and accepted at Jefferson Proving Ground on February 20, 1975. The level zero data is shown in Figure 4. Notice how the first seventeen data elements in the ARTIL definition are filled with the specific data for lot number KN-816-095. The next element in the definition is number 100\* ARTILLERY TEST INFO(RG) which is a level one repeating group. Figure 5 shows the elements in this repeating group and the values for the example lot. This repeating group is referred to as RG100. The definition next shows 200\* HE NP FORMAT INFO(RG in 100) or RG200. The elements in RG200

ANALYSIA SALASANA SALASANA

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FIGURE 2 ARTILLERY DATA BASE STRUCTURE

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Figure 3 DATA VALUES STORAGE IN ARTIL

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```
CALIEER+ 105 MM
TYPE* HE
LOT# KN-816-095
M NUMBER* MI
QUANTITY# 37125
MANUFACTURER* KANSAS
INITIAL DISP* ACCEPTED
FINAL DISP* ACCEPIEL
PROVING GROUND# JEFFERSON
TEST UATE* U2/20/1975
ASSEMBLY DATE + - NULL-
TYPE TEST + FIRST TEST
FIRING RECORD NUMBER # 374
ITEM NOMENCLATURE + CIG. 105Mh. HE. HI DUALGRAN. W/SUPPL CHO M.O FUZE F
      /hGm -M2A1.P2#2.M49.M103.M137
CAUSE OF REJECTION* NONL
RELATED FIRING RECORD* NONE
CORRECTION* 1 MPS
```

FIGURE 4 LEVEL ZERO ELEMENTS WITH VALUES

```
1* 105 MM
2* PE
3* KN-816-095
4* M1
5* 37125
6* KANSAS
7# ACCEPTED
6* ACCEPTED
9* JEFFERSON
10* 02/20/1975
12* FIRST TEST
13* 374
     CTG. 105MM, HE, M1 DUALGRAN, W/SUPPL CHG W/O FUZE F/HCW -F2A1.M2A2
14*
      .849.8103.8137
15*
    NONE
```

16\* NONE 17\* 1 MPS

SPECIFICATION\* - NULL-DRAWING\* - NULL-

TEST NAME + ACCEPTANCE TEST PHASE + VEL APE REF VS TEST REF DATE FIREU# 02/20/1975 APPROX TIME FIRED: 912 AZIMUTH# 353.90 Level One TARGET DISTANCE + - ILLL-FIRING POSITION # 1-15 Artillery Test Info WIND VELCCITY\* -NULL-WIND DIRECTION\* -NULL-PROP CHO# 7 INCR TEST REMARKS\* FUNCTION. AMB MALFUNCTIONS\* -NULL-TEST SAMPLES. VEL 5. 10 VEL UNCORR MEAN\* 464.00 VEL CORR MEAN\* -NULL-VEL STOR 1.70 VEL PAXIMUM\* 46:.00 VEL FINIMUM: 462.00 PRES N# -NULL-PRES MEAN\* -NULL-PRES \*AXIMUM# -NULL-Level Two PRES MINIMUMY -HULL-RNG N# -HULL-HE, WP, Format Info RNG FEAN+ -NULL-RNG STD# -NUL' -KNG MAXIMUM# -NULL-RNG MINIMUM# -NULL-DEFL N+ 10 CLFL MEAN\* 260.0 CEFL STU\* .0 TRACER NA -NULL-TRACER MEAN\* -NULL-TRACEN MAXIMUM# -MULL-THACER MINIMUM# -NULL-FLAG\* -NULL-RND NO# 1955 SAMP NO. 1 PROJ FUNC# -NULL-FUZE ACTION+ -NULL-Level Three VEL# 467.0 HE, WP, Format Round RNG+ -NULL-UEFL# 260 By Round Information PRES\* - NULL-WI\* -NULL-KEFAKKS\* -NULL-RFLAG\* -NULL-HE-WP DEFECT\* -NULL-

FIGURE 5 LEVEL ONE, TWO, AND THREE ELEMENTS AND VALUES

and the example values are also shown in Figure 5. RG280 is a repeating group in RG200 and contains elements which refer to round by round measurements. Values for the first round fired in lot KN-816-095 are also shown in Figure 5. Looking at the data values in Figures 4 and 5, and at the definition and the tree structure (Figure 2) one can see that the data for KN-816-095 is stored in an easily defined manner so that any one data value may be accessed quickly.

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Figure 6 is the elements for RG280 with the values for the second through fifth rounds. This illustrates the use of the repeating group structure for data storage. It was not necessary to define elements for each round fired, but rather data for each round is stored in a generalized definition (RG280) which allows for repeated value insertions. We see in Figure 5 that 10 rounds were fired (Test Samples = 10) and therefore we would expect to find 10 sets of data in RG280 (only the first five are shown here).

So far we have seen the level zero data and the data concerning the reference phase of the acceptance test for KN-816-095. The results of the test phase are stored as a second set of data in RG100. Figure 7 shows the data for the test and safety phases in the RG100, RG200, and RG280 structures. Notice how the data for this example lot has now been layered onto the definition in a hierarchical manner so that each value is uniquely stored and can be identified by lot number, phase name, and round number for easy access.

The tree structure in F gure 2 shows three level one repeating groups of data in addition to the test information discussed above. Data card, support equipment, and comment information groups contain the values for KN-816-095 as presented in Figure 8. With the inclusion of this data, all the important manufacturing and acceptance test results are stored in data base ARTIL and can be retrieved by referencing either the element number or name.

RML NU# 1556 SAFP NO\* PHOU FUNC\* - NULL-FUZE ACTION\* -NULL-VEL # 466.0 RNG\* -NULL-UEFL# 260 PRES\* -NULL-WT# -NULL-KEPARKS+ -NULL-RFLAG\* -NULL-HE-MP DEFEL I\* -KULL-RNL 1104 1957 3 SAME NO\* PRCJ FUNC\* -NULL-FUZE ACTION - HULL-VEL# 465.0 RNG\* -NULL-DEFL\* 260 PRES - WULL-WT# -NULL-HETAKKS# -NULL-RFLAG\* -NULL-HE-WP DEFECT + HULL-RAG NU# 1958 SACE NO\* 4 PROJ FUNC\* -NULL-FUZE ACTION\* -NULL-VEL# 464.6 KNG\* -NULL-UEFL# 260 PRES# -NULLwit -KULL-REMARKS. -NULL-KFLAG\* -NULL-HE-AP DEFECT\* -:. ULL-RNI NO# 1959 SAPP NO\* 3 PROU FUNC# - NULL-FUZE ACTIONA -NULL-VEL\* 463.6 KNG\* -NULL-DEFL\* 260 PRESA -NULL-WI# -NULL-HEMARKS+ -I-ULL-RFLAG\* -NULL-HE-MP DEFECT# -NULL-

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SECTION OF SECTION OF

TEST NAME\* ACCEPTANCE
TEST PHASE\* VEL APO
NEF VS TEST\* TEST
DATE FINEU\* 02/20/19/5
APPROX TIME FINEU\* 913
AZIMUTH\* 353.90
TARGET UISTANCE\* -NULLFIRING FGSITIGN\* N-13
WIND VELOCITY\* -NULLWIND DINEUTION\* -NULLPYCP CHG\* 7 INCR
TEST NEMANS\* FUNCTION, AMB

and the second property of the control of the contr

MALFUNCTIONS\* -NULL-TEST SAMPLES\* 10

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Whise Control Dates When his the Xolden Solden States and American

VEL Iv\* 10 VEL LACORK MEAR\* 467.0U VEL CURK MEAN\* 465.00 VEL SIC+ 1.40 VEL PAXIBUPA 461.00 VEL TINIMUM# 4t ... U 6 PRES N# -NULL-FRES MEANA - NULL-PRES MAXIPUP\* -NULL-PRES MINIMUM# - \*\* LLL-RNG N\* -NULL-RNG FLAN\* -NLLL-KNG SIL\* -NULL-RNG FAXIMUM# +hull-RNG PIRIMUPA -RULE -DEFL N# 10 LEFL MEAN 200.0 CEFL STUR . C THACKH IN -INLLL-TRACER REAN - NULL-TRACER PAXIFUR + - WULL + THACER MINIPUL\* - LULL-FLAG\* -NULL-

RNI NG: 1956
SART NG: 1
PROU FUNC: -NULLFUZL ACTION: -NULLVEL: 467.0
RNG: -NULLDEFL: 260
PRES: -NULLWT: 52.50
REMARKS: -NULLRFLAGE: NULLHE-AF DEFE[1: -NULL-

والمرابع والمنافع والمنافع والمراكز والمنافع والم

110\* ACCEPTANCE 111\* SAFETY 112\* TEST 113\* 02/20/1975 114\* 957 115\* 352.87 117\* H-12 120\* EXCESS 123\* 5 220\* 5 221× 427 222\* 431 223\* 415 240\* 5 241\* -150.0 242\* . 0 281\* 1153 282\* 1. 267\* -150 288\* 415 281\* 1154 282\* 12 287\* -150 288\* 430 281\* 1155 282\* 13 287# -150 286\* 429 281\* 1156 282\* 14 287# -150 266\* 430 281\* 1157

282\*

15 287\* -150 288\* 431

FIGURE 7 (CONT'D.) SAFETY PHASE REPEATING VALUES

AND THE PROPERTY OF THE PROPER

a new control and the control of the control of the control of the control of the

```
EGUIP NAME* HOW: 100MM
EGUIP FOLEL* MEAS
EGUIP LOI* 18915
```

EGUIP NAME\* TUBE+185Mh EGUIP MUDEL\* M2A2 EGUIP LUT\* E7370

EGUIP NAME\* CARRIAGE EGUIP PUDEL\* M2A2 EGUIP LUT\* 6567

EGUIP NAME\* RECOIL EGUIP FUDEL\* M2AS EGUIP EUT\* 2370

ARTILLERY SUPPORT

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CHARLES TO THE THE PARTY OF THE PARTY AND THE PROPERTY OF THE PARTY OF

EGUIP NAME\* HOK. 10576

EGUIP FUULL\* M137c1 | EGUIP LUT\* 2052

EQUIP NAME# TUBE+102Ah EQUIP MUBEL\* M137E1 EGUIP LUT# 60120

ESUIP NAME\* CARRIAGE ESUIP RODEL\* #31 EGUIP LOT\* 790

EGUIP NAME\* RECUIL EGUIP MUDEL\* M37 EGUIP LUT\* 2636

COMMENTS\* ALL VEL CORR TO PROD WI=33 LB. ARTILLERY COMMENT INFORMATION

COMMENTS\* PERCAT LOT LEF= 0.00

FIGURE 8 ADDITIONAL LEVEL ONE DATA

#### 111. DATA RETRIEVAL

As illustrated in Figure 1, several data retrieval formats exist within ARIES. Interactive data requests result in an immediate display on the
peripheral in use; data lists can be created either interactively or batch;
data lists can be stored as permanent disc files or they can be used as input
files to the analysis routines; data lists or analysis outputs are available
from line printers. Interactive and batch retrievals will be discussed separately.
A few System 2000 concepts will also be discussed.

## String Concept in System 2000

A string is a predefined command which when executed results in the performance of multiple S2K commands. The use of strings is particularly useful when a user has a repetitive or lengthy retrieval and would like to refer to this series (or string) of commands by some shortened code word.

There are two types of strings. The first, the simple string, allows the definition of a series of S2K commands directly callable by nothing other than the string number or name. No variables are allowed in the simple string. The second type, the extended string, also allows the definition of a series of S2K commands, but these commands may contain symbolic arguments which are satisfied by the substitution of actual arguments when the extended string is executed.

An example of a simple string can be found in data base ARTIL, component number 4030.

4030 \* TALLY (STRING \$ TALLY/EACH/C1% TALLY/EACH/C4%\$)

This simple string will execute the three S2K commands shown above in the string definition. It results in the printing of each unique value for components C1, C2, and C4 (caliber, type, and H-number). In order to call this series of S2K commands the user must punch on a card or type into the system:

\*TALLY\*

\*C4030\*

The output will appear on the screen or as part of the output file for a batch program. Further explanation of this string and other available strings can be found in Appendix A.

An example of an extended string can be found in data base AKTIL, component number 4005.

4005 ★ DISPLAY (STRING \$ PRINT/NAME, STUB, GROUP, NULL SUPPRESS, REPEAT SUPPRESS/BY ENTRY, C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C12, C13, C14, C100, C200, C300, C400, C920, C98 MHERE C3 EQ ★1★ \$ \$)

This extended string will execute this lengthy command when it is called in the following manner:

\*DISPLAY (MA-014-492)3

\*C4005(NA-014-492)%

The lot number provided as an argument during execution is substituted between the asterisks where the number "1" appears in the string. Extended strings with multiple arguments are also possible. The four argument string CSU' is called by:

\*CSUM(81 MM, HE, 01/01/74, 01/31/74)%

and will list surmary data for all 81MM, HE lots manufactured during January 1974. The use of extended strings is also described in Appendix A.

## The 'MiERE' Clause in System 2000

The purpose of the MHERE clause is to specify the conditions required to qualify data sets from which retrievals are to be made. For example:

PRINT LOT WHERE MEAN VEL LQ 850%

The ARIES user must understand the MHERE clause structure because some of the strings discussed in Appendix A require a legal where clause as an input argument.

The object of a where clause must be a keyed data item (see Section II.2). A quick look at the definition will tell the user whether the where clause object item is a key or non-key element. If an element is not specified as being non-key, it is assumed to be a key element.

The conditions modifying MHERE can be simple or complex combinations of restrictions on the qualifying data sets. All MHERE clauses employ system operators of one type or another -- e.g., EXISTS, FAILS, EQ, NF, LT, LE, GT, GE, and SPANS. Most are self-explanatory, and no more than a brief knowledge of their meanings should be necessary to understand this discussion.

The effect of a WHERE clause is to focus data retrievals on just those segments of the data base of specific interest. Without a WHERE clause, the entire data base qualifies and every valued retrieval component specified will be output. There would be considerable difference in the output produced from the ARTIL data base, for exacyle, by issuing these two commands:

PRINT CALIBER%

PRINT CALIBER WHERE LOT EQ MA-014-495%

In a retrieval command containing a MHERE clause, the MHERE clause is processed first to determine which portion of the data base should be considered for those actions specified to the left of the MHERE clause. The normalizing concept has to do with the problem of selecting the appropriate elements or repeating groups for retrieval. This is important to the user because, understanding the concept, he can construct his command to achieve the unique results desired.

Three new terms are required at this point to assist in the understanding of this concept.

a. Specified Data Sets - the data sets implicitly identified by the components listed to the left of the NUFRE clause statement in a retrieval request. The component may be identified by name or by number. The data sets are implicitly identified by requesting elements within the data sets or naming

the repeating group which generates the Specified Data Sets. The level within the data base structure where these Specified Data Sets occur is of great importance. If elements are used to identify the Specified Data Sets, then the elements and the data sets will be at the same level, since the elements come from within the data set. If a repeating group is used to identify the sets, then the Selected Data Sets will occur at one level below the listed repeating group.

- b. Qualified Data Sets data sets that satisfy the entire WHERE clause condition(s). When the system starts processing a command it processes the WHERE clause first. Those data sets which satisfy all the conditions in the WHERL clause are temporarily "collected" and tested to see if any of the Qualified Data Sets are named or implied by the Specified Data Sets. If they are, they become:
- c. Selected Data Sets data sets produced from the Qualified Data Sets. That is, those data sets named by the Specified Data Sets and selected by qualification for retrieval.

As explained previously, some retrieval requests do not use the MHERE clause. If the request contains no MHERE clause, then the entire data base qualifies for output. If a MHERE clause is used, but no data sets satisfy the conditions imposed by the MHERE clause, no action is taken for the request. If a list of Qualified Data Sets is produced, then each Qualified Data Set is examined to see if it is also a Specified Data Set. If it is, then it becomes a Selected Data Set. If all components in the MHERE clause reference only the Specified Data Sets, then all Qualified Data Sets are also the Selected Data Sets. The following example uses the ARTIL Data Base Definition and Data Base Structure.

PRINT VEL CORR MEAN, PRES MAXIMUM, RNG MEAN WHERE LOT EQ LS-067-133% OR

PRINT C212, C222, C231 MHERE C3 EQ LS-067-133%

Effect: There is only one qualified data set and when it is selected the following output will result:

8

212 \* 351.38 222 \* -NULL-231 \* 1048

212 + 874.54 222 + 82

231 \* 4659

Iwo sets of data are generated because data exists for both the one increment and nine increment firing phases. To obtain only one set of data the where clause should be:

WHERE LOT EQ LS-067-133 AND TEST PHASE EQ 1 INCR\$

OR

WHERE C3 EQ LS-067-133 AND C111 EQ 1 INCR\*

# Interactive ARIES Retrievals

The first step in the performance of an interactive ARIES retrieval is to LOGIX at a teletype or screen location. It is assumed that the user knows how to do this. The following steps should then be performed.

#### CONTIANO

ATTACH, ABSFIL, ID=ASRSD

PFN = ABSFIL

CYCLE NO. = 1

COMMAND

ABSFIL.

07/07/75 14.17.15\*BEGIN SYSTLM 2000\*

USER, PAD%

DATA BASE NAME IS <DBN> \$

ASSIGNLD (DBA) 47 37 06/18/75 14.13.08

Legal arguments for the data base name (DBN) are ARTIL, COMP, etc.

At this p- it strings or S2K commands may be typed into the system. All requested outputs w<sup>2</sup> ! be prir+2d on the screen unless a report file is named. This is accomplished by typing:

REPORT FILE IS ogical file name > \$

where logical file name is any 1-7 character-file name acceptable to CDC operating system. This command directs all outputs to the logical file which then can be manipulated as any other CDC system file.

The interactive execution of strings must be approached with a note of caution. The user should execute from a teletype or screen only those strings in Appendix A which have a suggested operating mode of INTERACTIVE. Those strings labeled as BATCH will produce a large volume of data in a 130-character wide format suitable for line printer display. On a teletype, this format is time consuming and unsightly due to wrap around which results from overflow of the teletype field.

There are several help commands embedded in ARIES to aid the user by (1) listing the basic ARIES strings and (2) providing instructions for their use. For a list of all the ARIES strings available within a data base type:

\*HELPCOMMAND\*\*

To obtain instructions for any one of these commands, type:

\*HELPI(XXXX)%

where XXXX is the ARIES string name.

FUNCTION - Lists purpose of string
USAGE - Describes how to use string
EXAMPLE - Provides an actual example

The HELP1 string displays all three sections. If only one section is desired, the HELP2 string is used.

\*HELP2(XXXX,YYYY)

where XXXX is the ARIES string name and YYYY is the name of the section.

\*HELP1(SUMMARY) will display a three section description of the ARIES string called SUMMARY.

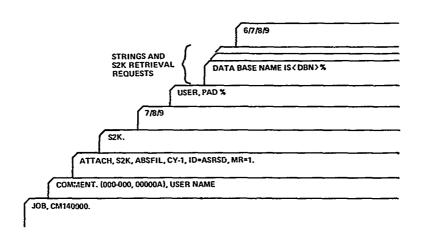
\*HELP2(SUMMARY, EXAMPLE) will only display the example section of the instructions.

To obtain a synopsis of these instructions, the user need only type \*HELP\*\*.

# 4. Batch Processing of ARIES Retrievals

Deck structure for the batch processing of ARIES retrievals is shown in Figure 9. The control cards are as shown except that the user must use his cost center and charge codes on the comment card.

All strings and S2K commands may be placed on punched cards in the section indicated. All strings and commands end in a percent sign. The output is returned via the line printer at the point of deck input unless otherwise specified. The formats and definitions of the strings can be found in Appendix A. For the user who wishes to construct his own strings, reference is made to the System 2000 Reference Manual for instructions.



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Figure 9 DECK STRUCTURE FOR BATCH PROCESSING RETRIEVALS

#### IV. DATA ANALYSIS

ARIES allows the user to retrieve groups of data using a set of strings. These groups (or files) of data can then be read by a post processor which will display and analyze retrieved groups.

## l. Deck Structure

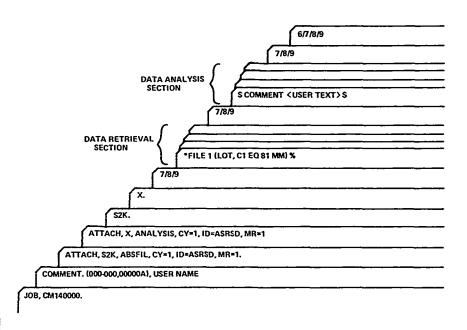
The deck structure for ARIES data retrieval and analyses is shown in Figure 10. The user must put his own cost center and charge codes on the comment card.

The data retrieval section is a set of punched cards each requesting a group of data to be retrieved for subsequent analysis. Each card calls an extended string with two arguments. The use of these strings (FILE1, FILE2, FILE3, . . . FILE19, FILE20) is explained in the Analysis Commands Section of Appendix A. One to twenty data files can be created with these strings. The first argument of each string is the component name or number for the data to be stored on the local file. The second argument is a legal System 2000 MIERE clause which qualifies the data set being retrieved. For example:

\*FILE14(LOT, CALIBER EQ 81MM)\*
will retrieve all the lot numbers for all the 81mm lots stored in data base
ARTIL. This list of lot numbers will exist on a local file called FILE14.

The data analysis section contains a set of punched cards which allow the user to specify which local files of retrieved data should be analyzed and the manner in which the data will be displayed or analyzed. The available analysis routines are presented in Appendix B. The format of the input data analysis section is the same as the format for a NAMELIST reader input. That format is a biank in column one followed by a dollar sign and an analysis routine name. The arguments for each routine are separated by commas and the end of the arguments is denoted by another dollar sign. For example:

SMREG LIST=1, 16EP=11, INDI=5, IND2=3, IRES=15



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Figure 10 DECK STRUCTURE FOR DATA RETRIEVAL AND ANALYSIS

will request a multiple regression analysis with a list of the raw data with the data in FILE11 as the dependent variable and the data in FILE5 and FILE3 as independent variables. A list of the residuals is also requested.

Several examples of retrieval and analysis programs are presented in the Examples Section of this manual.

#### DICTIONARY

Analysis	Commands	

- Those instructions by which the user defines how he wants the data analyzed and displayed. For example, the analysis commands may request a multiple regression analysis and a plot of variable A vs. variable B.

# Batch Processing

- A batch processed program is one that is presented to the computer through the input queue, and competes with other jobs in that queue for access to the computer. A batch job is normally a deck of punched cards passed through a card reader. See interactive processing.

## Catalog

- The process whereby a local file is made permanent and thereby recoverable at a later time.

#### Data Base

 A non-redundant collection or interrelated data items processable by one or more techniques.

## Data Element

- The unique name used for specifying a single set of element values. In ARIES a data element may be the "C" number or the element name (e.g. Cl or caliber is a specific data element). See data value.

# Data List

 The set of all data values resulting from a specific retrieval command. This list is usually a local file.

#### Data Value

- The stored information are data values. Data values are stored in specific data elements.

Usually several data values exist within each data element (e.g. for the data element C3\*LOT, the data values are all individual lot numbers).

Disc Files

- Disc files are those files which are stored on computer central site devices called disc packs.

Data, programs or command sequences can be stored as disc files. Disc files are permanent records which can quickly be read into computer memory.

Fornat

- The physical configuration of the data. There are input data formats, storage formats and output formats. Data formats are important because computers are usually programed to expect data is a strictly defined configuration and unformatted or wrong formatted data is not interpretable by the machine. A typical data format may be 14 which means an integer number with four significant digits. To express the number twice in 14 format is 0012.

Interactive Processing

- An interactive program is one that is presented to the computer through a dedicated input channel and is processed almost immediately. An interactive job is normally executed from a teletype and allows the user to input data during processing so that an interaction between the program logic and the user exists.

Key Element

- A data element name which is specified as a key element in the definition has an auxiliary table associated with it. In this table, all the data values are segmented into ordered groups. The table also contains storage addresses for each data value. When a retrieval is requested for key element values, the segmented table is used to select those values which neet the request criteria. The use of this table eliminates the time consuming need to sequentially retrieve from disc and test each data

value. The number of key elements dictates the amount of storage space necessary for a data base because the auxiliary tables do require storage areas.

Local File

- The CDC Scope operating system allows the user to create groups of data or commands or programs on files each having a unique name.

These files when created are local files which will be lost upon conclusion of the job. In order not to lose one or more of these files, the user must issue a catalog command for each file he desires to be recoverable for another job. The issuance of a catalog command causes a copy of the file to be stored as a permanent disc file from which it can be recovered when needed.

Logical Structure

- The logical structure of a data base is the set of relationships between data elements in the data base. The understanding of the logical structure of a data base will aid the user in structing data retrievals.

Non-Key Element

- A non-key data element has no auxiliary table associated with it; therefore, it takes less storage than a key element. However, the retrieval of a subset of the data values from a non-key element requires a time consuming sequential search through all stored values for that element.

Permanent File

particular deservable deservables deservables de la company de la compan

 A permanent file is one whose contents are not lost upon completion of a job. See local file. Ouerv

- The act of requesting specific select data values from the data base. A query is a structured request for qualified data values.

Read Only Programs

- When a program is catalogued as a permanent file, the access to it may be specified in a variety of ways. A set of passwords control this access and only those who know the passwords may change, purge or extend the program. A read only program can be read and executed by anyone who attaches it, but may be altered only by those who know the passwords.

Retrieval

- The act of grouping a set of specific data values in an output file. See query.

Structure

- The structure of a data base consists of the definition and the repeating group structure which defines the hierarchy of data storage levels. See logical structure.

S2K Natural Language

- The syntax whereby retrievals can be made from an S2K data base.

Update

- The process of adding new data or deleting obsolete data from a data base.

### APPENDIX A

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## STRINGS

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GENERAL INSTRUCTIONS

### STRING INVOCATION

```
BATGI MODE USAGE:
     FROM CARDS:
         USLR, PAD
         DBN IS (DATA BASE NAME) 3
            STRING > %
         EXIT %
     FROM SCRELN OR TELETYPE:
         USER, PAD%
         DEN IS (DATA BASE NAME)
         REPORT FILE IS XXX%
           STRING $
         LXIT %
          BATOI, XXX, PRINT, AM, ABC.
             where:
             AM = ID FOR 200 USER TERMINAL WHERE FILE IS TO PRINT
            ABC = NAME OF FILE AFTER BATCHING IS COMPLETED
     INTERACTIVE MUDL USAGE:
          FRO'I SCREEN OR FELETYPL:
               USLR, .PAD%
               DEN IS (DATA BASE NAME) $
                 (STRING) $
                    (STRING OUTPUT APPEARS ON SCREEN OR TELETYPE)
               EXIT%
```

HELP COMMANDS

HELP

AUMBLR:

1060

DATA BASE:

ARTIL, COMP, LAW, TWO75, WEAPON

SUGGESTED OPERATING HODE:

INTERACTIVE OR BATCH

PURPOSE:

TO PROVIDE USERS WITH INSTRUCTIONS FOR USING
THE THREE BASIC HILLP COMMANDS -- \*HELPCOMMAND\*,
\*HELP1( )\* AND \* HELP2( , )\*.

USAGE:

∗III LP+ \*

OR

\*C1060\* %

#### SAMPLE OUTPUT:

HELP

HELP

FUVCITO

THE PURPOSE OF THE SEVERAL HELF COPPANES IS TO-111157 ALL AVAILIABLE COMPANDS

2) PROVICE INSTRUCTIONS FOR USING GASIC ARIES COMMANUS

the wind of the second second

FOR LIST OF ALL COMMANDS AVAILIABLE IN ANTIL. TYPE \*\* NELPLOS BAND\*

THE INSTRUCTIONS FOR EACH CUPMAND ARE SUBDIVIDED INTO & SECTIONS

THESE & SECTIONS ARE

A)FUNCTION-LISTS PURPOSE OF CURRAND B)USAGE -DESCRIBES HOW TO USE CURRAND

CILXAPPLL -GIVES EXAMPLE OF COPPAND USF

TO LIST FUNCTION USAGE AND EXAMPLE OF COMMAND XXXX TIPL

\*HELF1(XXXX)

\*HERE XXXX = ARIES CUMBAND RAME

TO LIST GILLY THE FUNCTION USAGE OR EXAMPLE OF COMPAND XXXX. TYPE

\*HELF (XXXX+YYYY)

WHERE XXXX = ARIES CUMMAND WAME

YYYY = FUNCTION, LSAGE OR EXAMPLE

EXAMPLE

\*\*\*\*\* ALL COFMANDS PUST BE FOLLCHED BY A PERCENT SIGH \*\*\*\*\*

SAMPLE FUR CUTTABL HELPCUMKARD

LIST ALL BASIC ARIES COMPANES

\*けたしかくしがかんいむ\*

TAMPLE FOR COMMAND HELPI

LIST FUNCTION LOSAGE AND EXAMPLE OF ARIES COMMAND COMPLOT

\*HELP1(COMPLOT)

SIMPLE FOR CORPAGE HELPS

LIST ONLY USHUE OF ARIES COFFARE COFPLCT

\*HELF2(CUFFLC1.USAGE)

STRIAG: HLLPCO-BUND

NUMBER: 1090

DATA BASE: ARTIL, COMP, LAW, TWO75, WEAPON

SUGGESTED OPERATING MODE: INTERACTIVE OR BATCH

PURPOSE: TO LIST ALL BASIC COMMANDS AVAILABLE TO ARIES
USERS. OBLY THOSE COMMANDS APPLICABLE TO THE
ATTACHED DATA BASE ARE LISTED.

USAGE: \*HLLPCO'TIAND\* \$

OR

\*C1090\* %

HELP1

NUMBER:

1070

DATA BASE:

ARTIL, COMP, LAW, TWO75, WEAPON

SUGGESTED OPERATING MODE:

ENTERACTIVE OR BATCH

PURPOSE:

TO LIST INSTRUCTIONS FOR USING A USER SELECTED

ARILS COMMAND. THE INSTRUCTIONS FOR EACH COMMAND

ARE SUBDIVIDED INTO 3 SECTIONS:

- a). FUNCTION LISTS PURPOSE OF COMMAND.
- b). USAGE DESCRIBES HOW TO USE COMMAND.
- c). EXAMPLE GIVES EXAMPLE OF COMMAND USE.

THE HELPI COMMAND LISTS ALL 3 OF THE ABOVE FOR

SELECTED CONTAND.

NOTE: SEE COMMAND HELP2 FOR INSTRUCTIONS ON HOW TO RETRIEVE ONLY THE FUNCTION, USAGE OR EXAMPLE INSTRUCTIONS. SEE COMMAND HELPCOMMAND

FOR LIST OF ALL AVAILABLE COMMANDS.

USAGL:

\*HELP1 (ARG1)%

ΘR

\*C1070(ARG1) \$

ARGUMENTS:

ARGI - ARILS COMMAND NAME

**LXAMPLE:** 

\*HELP1 (COMPLOT) \$

LISTS FUNCTION, USAGE AND EXAMPLE OF ARIES COMMAND

COMPLOT

iiLLP2

1080

Aumber:

DATA BASE:

SUGGESTED OPLRATING MODE:

INTERACTIVE OR BATCH

PURPOSE:

ARIES COPPAND. THE INSTRUCTIONS FOR EACH COPPAND ARE SUBDIVIDED INTO 3 SECTIONS:

TO LIST INSTRUCTION SUBSET FOR USIN SELECTED

a). FUNCTION - LISTS PURPOSE OF COMMAND
 b). USAGE - DESCRIBES HOW TO USE COMMAND

ARTIL, COMP. LAW THOPS, WEAPON

e) EXAMPLE - GIVES EXAMPLE OF COMMIND USF

THE HELPS COMMAND LISTS EITHER THE FUNCTION, USAGE OR EXAMPLE OF THE STREETED COMMAND.

NOTE: SEL COMMAND HELPT FOR INFORMATION ON HOW TO RETRIEVE COMPLETE INSTRUCTIONS FOR THE SELECTED COMMAND. SEE COMMAND HELPCOMMAND FOR LIST OF ALL AVAILABLE COMMANDS.

USAGE:

\*HELP2(ARG1, ARG2)%

+C1080(ARG1, ARG2);

ARGUMENTS: ARG1 = ARIES COMMAND NAME

ARG2 = FUNCTION, USAGE OR EXAMPLE

LXAMPLE: #HELP2(COMPLOT, USAGE) \$

LISTS USAGE OF ARILS COMMAND COMPLOT.

## SAMPLE OUTPUT:

HELP COMMAND

ARIES COPFANC SCREAKY 69/18/75

and the state of t

COPMARE NAME

HELP " +1Lt1

SUPPARY DISPLAY

CCMPLUT

CSEARLE HEKPER

ILLUMFR

HEPHLATER ASUM

หมอง

CSUM **LKCSS** 

ACKUSS

TALLY

TYPESUP CALSUM

CALITPL

DISPOSITION UATESUN

HELP1

COMPLOT

nas statementskinningen som production in segmente signister segmenter signister segmenter segmenter segmenter

**FUNCTION** 

THIS CLYKANE FRONICES CUMPONENT LOT INFORMATION FOR A SPECIFIED

COMPLETE MUCKE LOT KUMBER. THE NAME-LOT NUMBER-GUARITIY USEC

THE MANUFACTURER ARE GIVEN FOR EACH COMPONENT.

USAGE

\*COPFLUT(ARG1) OR \*C40D6(ARG1) WHERE ARG1 = LOMPLETE ROUND LOT NUMBER

EXAPPLE

ALL COPPARIS MUST BE FULLOWED BY A PERCENT SIGN \*COMPLUT( + A-014-492)

HELP2

COPPLUT

USAGE

4COMPLUT(ARG1) OR \*C4006(ARG1) WHERE ARG1 = CUMPLETE KOUND LOT NUTBER

39

BATCH DATA RETRIEVAL COMMANDS

· 「大きなないのではなっている。」というできないないからからなっています。

STRING: FILE1
FILE2
FILE3
:
:
FILE19

NIPIBER: 2001 2002

2003

FILE20

2019 2020

DATA BASE: ARTIL, COMP, LAW, TWO75, MEAPON

SUGGESTED OPERATI'S MODE: BATCH ONLY

PURPOSE: TO CREATE DATA FILES IN FORMAT COMPATIBLE WITH

the state of the s

ANALYSIS PACKAGE. ONE TO TWENTY ANALYSIS FILES
MAY BE CREATED USING STRINGS FILE1---FILE20.
THE OUTPUT OF EACH RETRIEVAL OPERATION IS STORED

ON LOGICAL FILES FILE1---FILE20.

USAGE: \*FILE: (ARG1, ARG2) %
OR

\*C2001 (ARG1,ARG2) %

\*FILE20 (ARG1,ARG2)\$
OR

\*C2020 (ARG1,ARG2) \$

APGIMENTS: ARG1 = ONE COMPONENT NUMBER OF VARIABLE TO BE
RUTRIEVED

ARG2 = QUALIFICATIONS ON ARG1 IN WHERE CLAUSE FORMAT.

NOTE: STRING IS LIMITED TO 80 CARD COLUMNS, AND NESTED WHERE CLAUSES ARE NOT

ALLOWED

EXAMPLE:

ARTIL DATA BASE: \*FILFI(LOT, CALIBER EQ 60:M) AND TYPE EQ HE) & CREATES A FILE CALLED FILEI CONTAINING THE LOT NUMBERS OF ALL 60:M, HE COMPLETE ROUNDS. OR: \*FILE(C3, C1 EQ 60:MM AND C2 EQ HE) &

DATA BASE ARTIL

The solution of the state of the solution of t

SUMMARY

NUMBER:

4000

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE:

TØ LIST CALIBLE, TYPE, LØT NUMBER, M NUMBER,

TEST DATE, AND FINAL DISPOSITION FOR ALL LOTS.

DATA ARE SORTED BY CALIBER, TYPE, AND LOT

NUMBER.

USAGE: #SURBIARY+%

OR

\*C4U00\* \$

DISPLAY

NUMBER:

4005

DATA BASE:

ARTIL

SUGGESTED OPERATING HODLS: BATCH OR INTERACTIVE

PURPØSL:

TO PRINT ALL AVAILABLE DATA FOR GIVEN COMPLETE

RØUND LØT NUMBER.

USAGE:

\*DISPLAY(ARG1)%

υR

\*C4005(ARG1)%

ARGUMENTS:

ARG1 = COMPLETE ROUND LOT NUMBER

EXAMPLL:

\*DISPLAY(!IA-014-492) ş

CALIBER\* 60 HM TYPE\* HE LOT+ MA-6.14-492 M NUFBER\* M49A4 QUARTITY\* 99579 MANUFACTURER\* FILAN INITIAL DISP\* PROV ACCEP FINAL DISP\* PENDING PROVING GROUND\* JEFFERSON -IEST DATE # 02/27/1973 TYPE TEST\* FIRST TEST FIRING RELOND NUMBER\* 75-636 TIER NUMERCLATURE # 84944 TEST NAME + ACCEPTANCE TEST PHASE \* R-A O INCR HEF VS 1EST+ TEST WIND VECOCITY\* 24 TEST REMARKS\* TUPE RUMBER\* NUME VEL 1.\* 24 VEL GROOKE FEAR\* 167.00 VEL STOR 1.50 TVEL "PAXIAUR<del>T</del> 169.00 VEL FINITUF\* RNG N# 24---KNO PLANA FAG STOR 5.1 HAG BAXINUFA TOEFL Na 24 DEFL STD# 1.2 TEST NAME + ACCEPTANCE TEST PHASE # R-A 4 TACK REF VS TEST+ TEST WIND VELOCITY# 24 TEST REMARKS+ TUBE RUMBER + KONE VEL K4 24 VEL UNCORK MEAN+ 490.00 VEL STD: 4.60 VEL PAXIMUR\* 507.00 VEL MINIMUNT 487.00 FKESans 24 PRES REANT 34-PRES MAXIMUN. 37 PRES MINIMUFF RN6 64 24 KNU PLANA 1796 RN6 510+ 27.5 RNS MAXIPUT\* 1841 KN6 PINIHUF# 17-9 DEFL IN 24" CEFE STD+ 6.2

ECUIP NAME - WEAPON THE

ESUIP PAMES SEAPON THU

EGUIP LUT# 7266

45

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SAMPLE OUTPUT:

DISPLAY

AUMOER:

NG: COMPLOT

DATA BASE:

ARTIL

4006

SUGGESTED OPERATING MODES:

BATCH OR INTERACTIVE

PURPOSE:

AND MANUFACTURE DATA FØR GIVEN CØ PLETE RØUND LØT NU BER.

TØ PRINT COMPONENT NAME, LØT NUMBER, QUANTITY

USAGE:

\*COMPLOT (ARG1) %

OR +C4006(ARG1) %

ARGUMENTS:

ARG1 = COMPLETE FOUND LOT NUMBER

EXAMPLE:

\*COMPLOT (MA-014-492) %

## SAMPLE OUTPUT:

COMPLOT
CALIBER* 60 MM
IYPE* HE
LOT* PA-C14-492
m number* M49A4
MANUFALTUKEK* MILAN
INITIAL DISP* PROV ACCEP
FINAL DISP* PENDING
PROVING GROUND& SEFFERSON
1651 Nates 02/27/1973
TYPE TEST FIRST TEST
FIRING RECCKU NUMBER* 75-636
TIEM NOMENCLATURE* F49A4 60 MM HE
CCPPUNENT NAME* PROPELLANT
• · · · · · · · · · · · · · · · · · · ·
CUMPUNENT LC1 * hal-66666
COMPONENT NAME * PROP LUTS
COMPURENT NAMES FUZE
COMPONENT LOT* FA-025-018
CUMPUNENT EGT # MA-U25-019
- COMPUNENT NAME + 16n CAKI
COMPONENT FOI+ 20 V+010-013
COMPONENT LOT* Sek +410-020
- CUPPUNENT MAPE* PROJECTIES
CUPPUNENT LOI* YCC-002-018
COPPUNENT NAME + FIN ASSUBY
COMPONENT-LU1+-UEL-004-002
- COPPUNENT HAME* CHTUKATUK -
COPPORERT WAME * PRIMER
The second secon
COMPUNENT LOI* MA-UUB-046
COMPONENT FOI* WY-008-043
-
COMPONENT LOI* MA-685-048

CSEARCH

NUMBER:

4008

ATA BASE:

ARTIL

SUGGESIED OPERATING MODES:

BATCH OR LATERACTIVE

PURPOSE:

TO LIST, THE COMPLLIE ROUND LOT NUMBER, QUANTITY, INITIAL DISPOSITION AND TEST DATE. FOR EACH COMPLETE ROUND USING COMPONENTS WITH A GIVEN COMPONENT LOT NUMBER. THE COMPONENT QUANTITY USED IN EACH COMPLETE ROUND LOT IS ALSO LISTLD. DATA ARE SORTLD BY COMPLETE.

JSAGL:

\*CSLARCH(ARG1) %

OR

\*C4008(ARG1):

ARGUMENTS:

ARG1 = COMPONENT LOT NIPGER

ROUND LOT NUMBER AND TEST DATE.

EXAIPLE:

\*CSEARCH(LS-116-018)%

REFRIEVES ALL COMPLETE ROUNDS USING FUZL LOT LS-116-018.

### SAMPLE OUTPUT:

CSEAR/11

LS-116-018 -----

CK CK 1115P CR 1EST LGT NUMLER TAKUD DATE LS-067-045 31012 FROV ACCEP 01/26/1973 LS-067-046 5965 PROV ACCEP u1/26/1973 LS-06/-047 41670 ACCEPTED 02/02/1973

COMPONENT

SUANT

THIS IS ARTIL

STRING.

HLHPFR

NUMBER:

4040

DATA BASL:

SUGGESTED OPERATING MODE:

ARTIL

BATCH ONLY

PURPOSE:

TO PROVIDE ACCEPTANCE TEST SUPPLARY AND DATA CARD INFORMATION FOR ONE USER SELECTED HE OR MP (SMOKE) LOT MUBBER. THE FOLLOWING PATA

ARE LISTED:

a). GLMLRAL LOT INFORMATION

b). TEST IDENTIFICATION DATAc). TEST SUMMARY DATA

d). ROUND BY ROUND DATA

e). DATA CARD SUMMARY

f). SUPPORT EQUIPMENT SUMMARY g). COMENT INFORMATION

USAGL:

\*HENPER(ARGI) %

OR

+C4040(ARG1) %

ARGUNILATIS:

ARG1 = COMPLITE ROUGH HE OR MY LOT NUMBER

Middle of the second se

EXVOLE:

\*HEWPFR(PB-010-026) \$

LISTS ACCEPTANCE TLST SUPPLARY AND DATA CARD INFORMATION FOR 105MM SMOKE LOT "B-010-026.

The state of the s JEFFERSON-PROVING GROUND-なせな 424 UATE FIREU\* 02/05/1975 FIRING POSITION # 12 TEST WAME\* ACCEPTANCE ACCEPTED CEFL - FEATW - 166.0 APPROX TIME FIRECT 1LSI PFASE\* SAFETY REF VS TESTA TEST PROF CHG\* EXCEUS FINAL . 0 PRES MAXIMUM\* \*MOMINIE UISP TEST "KE MAKKS+" DEFL N# 10 ML AN\* DEFL STUA PKES VA AZIMUIH\* FRES PKLS ACCEPTED INITIAL OISE PISS BLUFF 456.00 FACTUMEN 163.00 -465.60-MANL DATE FINED\* 02/US/1975 APPROX 11ME FINED\* 90 FIRING FOSITION\* H-13 IFSI NAME . ACCEPTANCE TEST PRASE . VEC AMI 2 to 0 . U VEL UNCOKK MEAN+ KEF VS 1EST# 1LST JEC CORR PEAN\* AZIMU11: 335.90 ACCEPTANCE TEST SUMMANT 1 3092 TT LMVOD VEL PAXIMUP\* VEL PINIMURA TEST REMARKS. CIG: 105MM: -SMUKE:" WP: - M60AZ r.L.A.v. DEFE STU \* 2 7 VEL 7. 05,16/75 'n B NUMBER MEBAR SHUNE 465.00 77 KELATEU-TIKING-KFEUKUT-NUN FIRING RECOND NUMBER 241 SCR APPROX IIME FINEC\* 907 466.00 HEWPFR - 1 UAIL FIKEU# 02/05/1975 ころしまれて TEST NAME ACCEPTANCE FIRING POSITION\* 11-15 10t MH 1EST DATE + 62/05/1975 PEST PRASE 4" VEL AMU 1\*PP-+28\*\*-P1K87-1E8P 560.0 SAMPLE OUTPUT: VEL UNCORR PLANA CAUSE OF REJECTION\* 11tr NUMENCLATURE ILL VS ILSTO KLY PROP CHES Y TRUK CURRECTION\* O MPS 42IMUTH- 335-96 VEL PAXIBUYA VECT Y 1 N I HURS JEFF 5. 19 IF ST REGARKS. 7£ 1/1+ 1) L.F.L. 31U+ **\*** LUI NUFULK F1-010-050 いたし

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HEM ٤) WE IGHT PRES -166 -166 -166 -166 UEFL -166 -166 -166 NGE 468.0 466.0 466.0 VEL FLZL ACT1CN INERT INERT INERT INEKT INLAT ž INCAI 333 333 Sec. 9000 S.u. FUNC NONE NONE NONE NONE NONE いとりに NONE RUNE SAT SAT -SAT SAT SAT SAT SAT SAI "RUUND" BY "ROUND "CATA SAMPLE 'n 10 09/18/75 1628 1632 1632 4568 4569 1814 1816 1820 1822 1822 1822 KOUND NUMBER 1815 4591 4593 4594 619 623 623 627 629 HEWPFR - 2 VEL 'AMU" JAN 1 SAMPLE OUTPUT: SAFET ずいせ LOT NUMBER

The transmission of the transmission of the transmission of the contract of th

are the transfer and the second secon

n terrery deprivate the intersoft the effect of the other wither were the factor and

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Mary and the first of the first

dada en de de de la composition de la c

din alabed to referrible of plastical good grounded, constitued by the contract

HEWPFR - 3 SAMPLE OUTPUT:

-DATE-MANU-COMPONENT COMPONENT CHARNT-1-TT DATA CARU SUMMAKT 09/16/75 ---------COMPONENT しいいかいんぶつつ 1 - 1 A A TIL

Í

:

LCT NUFBER FIL-010-026 SUPPORT EGUIPMENT SUMMARY U9/18/75 ECUIP LOT 16913 67375 6567 LGUIP PUDEL M2A2 7242 TL6E,105KM HUR TOPH ELGIP NAME

> LCT NUMBELL PII-010-026

53

i

:

64843 790 2658 2002 2370

M137E1

HUK 10511 TUBE . 105MM

M31

CAKHIAGE

HECO11

1242 11242

CAKKINGE

RCOIL

ALL VEL CURR TO PROJ WT=53 Lb. CUPMER 15\*

PERCNI LUI DLF= 0.00

しいとうしょう

いいかい かんしゅう かんかいか アラントランタ かんかん しょうじん かんかい あいかんかい かんしん かいしゅうしゅ しゅうしゅうしゅん かかしん

THE PROPERTY OF THE PARTY OF THE PARTY OF THE

String:	ILLUMFR

NUMBER: 3000

()

ARTIL DATA BASE:

SUGGESTED OPERATING MODE: BATCH ONLY

TO PROVIDE ACCEPTANCE TEST SUMMARY AND DATA PURPOSE: CARD INFORMATION FOR ONE USER SELECTED ILLUMINATING LOT NUMBER. THE FOLLOWING DATA

ARE LISTED:

- a). GENERAL LOT INFORMATION
- b). TEST IDESTIFICATION DATA
- c). TEST SUPPLARY DATA
- d). ROUND BY ROUND DATA
- c). DATA CARD SURMARY
- SUPPORT EQUIPMENT SUPPLARY f).
- COMMENT INFORMATION g).

\*ILLUNFR(ARGI) \$ USAGE: OR \*C3000(ARG1) %

ARG1 = COMPLETE ROUND ILLUMINATING LOT NUMBER ARCUNENTS:

EXAPPLE: \*ILLU:IFR(LON-040-915) %

> LISTS ACCEPTANCE TEST SUMMARY AND DATA CARD INFORMATION FOR 105MM ILLUMINATING LOT LON-040-015.

### SAMPLE OUTPUT: ILLENFR - 1 ACCEPTANCE TEST SUMMARY 09/18/75 MARILE -IKITIAL LOT NUPBER CALIBER TYPE M NUMBER CUANTITY FACTURER DISP M314A3 LCH-040-015 105 Kh ILLUM 6000 LCUISIANA **ACCEPTED** TEST-DATE# '0173071975 TYPE IEST\* FIRST TEST FIKING RECORD NUMBERA 75-191 ITEP NUMENCLATURE\* CANTRIDGE. 105MM. ILLUM #314A3 CAUSE OF REJECTION\* NONE RELATED FIRING RECORDS NONE CORRECTIONS NONE TEST NAME \* ACCEPTABLE --TEST PHASE\* FRCT AND REF VS TEST\* TEST UATE FIREL# 01/30/1975 APPROX TIRE FIREC\* 925 AZIPUTH# 1.52 FIRING POSITION H-13" " PROP LHOR 7 INCH TEST REMARKS\* 2 HAD NO TILLUM. EFFEC7 1LLUP N# 32 EFFECT ILLUM MAXIMUM+" 81.0 " EFFECT TELUN MINIMUM\* 55.0 FUZE TIHE N# "34" FUZE TIME MEAN+ 20.00 FUZE TIRE STL# .00 FUZE TINE MAXIPUM# 28.00 FUZE TIME FINIFUM# 28.00 EEFLEL N# 34 CLFLEC FAXIBUF\* GEFLEL MINIMUM\* TEST NAME + ACCEPTANCE TEST PHASE\* SAFETY" KEF VS IEST\* TEST DATE FIRED. 01/30/1975 APPHUX TIME FIREC# 1046 AZIPUTHE 1.52 FIRING POSITION\* H-13 PROPTCH6# EXCESST TEST REMARKS. FURE

DEFLEC NAXINUM\*
GEFLEC KINIKUM\*

35

SAMPLE OUTPUT:  LUI MUNELR  RUUNID BY ROUND DATA  WOUND BY RUUND DATA  WOUND BY RUUND DATA  LOW-UNIO-015  WOUND BY RUNNELL LEFECT BURST HORIZ FUZZ  WOUNDELR NAWGEL LEFECT REPAIR  1747  1740  1750  1						O	(*)				•	()	
### LON-UHU-015  L	Š	WPLE OUT!	'UT: JAJER - 2			LUT NUPL	X 10 10						
1	1	CUUND BY	ROUND DA	4	•	0 h0 - M0 T	-015						
1 65.0 28.00 15 5 65.0 28.00 15 6 65.0 28.00 15 7 66.0 28.00 15 10 64.0 28.00 15 11 64.0 28.00 0 12 70.0 28.00 0 13 70.0 28.00 0 14 70.0 28.00 0 15 70.0 28.00 0 16 70.0 28.00 0 17 7.0 28.00 0 28 75.0 28.00 0 28 75.		NUMBER	NUMBER		BURST P.	HOR12 RANGE	FUZE	CHUTE	VEL	DEFLEC	DESCENT RATE	PRES	REMAI
2     65.0     28.00     15       4     65.0     28.00     15       7     66.0     28.00     15       9     65.0     28.00     15       10     65.0     28.00     0       11     64.0     28.00     0       12     65.0     28.00     0       13     70.0     28.00     0       14     70.0     28.00     0       15     74.0     28.00     0       16     74.0     28.00     0       17     74.0     28.00     0       21     74.0     28.00     0       22     74.0     28.00     0       23     73.0     28.00     0       24     74.0     28.00     0       25     73.0     28.00     0       26     70.0     28.00     0       27     68.0     28.00     0       28     77.0     28.00     0       28     77.0     28.00     0       28     77.0     28.00     0       28     77.0     28.00     0       28     77.0     28.00     0       28     77.0     28.	ĺ	1747	7	65.0			28.00			15			HGB
10     10       11     10       12     10       13     10       14     15       15     10       15     10       16     10       17     10       18     10       19     10       10     10       11     10       12     10       13     12       14     12       15     10       16     10       17     10       18     10       19     10       10     10       11     10       12     10       13     10       14     10       15     10       16     10       17     10       18     10       19     10       10     10       10     10       10     10       10     10       10     10       10     10       10     10       10     10       10     10       10     10       10     10       10     10       10	:	1748	3	63.0	: !		28,00 - 28,00	,		15			
10         10<		1750	<b>+</b> 50	76.0			28.00			5 5			8
12		1752	- 9	73.0	-		28.00			2 5			
11 64,0 28,00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		170	. a a	40.41		*	90.00	:					9
11 64.0 28.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1		- 01	0.00			28.00	*** - *********************************		91			2
12 76.0 14 65.0 15 70.0 16 70.0 17 70.0 18 70.0 18 70.0 19 65.0 19 65.0 20 71.0 20 71.0 20 70.0 20		1757	3	0 +9			28.00			•			
15 70.0 28.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1758	13	72.0	!		28,00			-0			
17		1760-	14.	75.0	:		28.00	•	-	0			
19 66,0 28,00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1762	1	10.0	-		28.00			· • •			
21		1764	18	.0°h2-	-	-	28.00	!	-	9			
25 75.0 28.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1	1765	13	0.99			28,00			٥			
25 73.0 28.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1767	33	71.0			88.00			•			
25 73.0 28.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1769	23	79.0			28.00			þo			
27 68,0 28,00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1771	24	73.0	; !		28.00	1		6-0			
29 61.0 28.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1772	- 42	70.0		:	28.00			6			
24 77.0 28.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1	92	77.0	:	-	26.00			•			
31 70.0 28.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ł	17/5	62	0.19		!	00.46		•				ļ
35 55,0 28,00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1777	3 2	70.0			28.00						
34 77*U 28.00 88.5		1778-			•		28.00			  -  -			
36 36 37 37		1760	3	77.0			28,00			0			
25	1	1781	35			•	•		1	500		383	
		1763	3.5	}	;	į				n in		389	

The form of the state of the st

PROPERTY OF SECURIOR SECURITY OF SECURITY SECURI

SAMPLE OUTPUT: PLLUMFR - 3

> DATA CARD SUMMARY 09/18/75

COMPONENT LCT NUPBER NAME LUT

COMPONENT GUANTITE

COMPONENT DATE MANU

LOh-040-015

LOT RUFBER

LOk-040-015

SUPPORT EGUIPHENT SUMMARY 79718/75

772A2

₽5V5

712A5

EGUIP WAME HCw. 105MM

TUBE TUBE

CARALAUL

RECUIL"

EWUIF LOT M242

18915 67375 გ567 2370

THIS IS ARTIL

57

HEPHEATER

NUMBER:

3010

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

BATCH ONLY

PURPOSE:

TO PROCIDE ACCEPTANCE TEST SURMARY AND DATA CARD INFORMATION FOR ONE USER SELECTED HEP, HEAT, APDS OR TP LOT NUMBER. THE FOLLOWING DATA ARE LISTED.

- a). GENERAL LOT INFORMATION
- b). TEST IDENTIFICATION DATA
- c). TEST SUMMARY DATA
- d). ROUND BY ROUND DATA
- e). DATA CARD SUMMARY
- f). SUPPORT LQUIPHENT SUPPLARY
- g). COMMENT INFORMATION

USAGE:

\*HEPHEATFR (ARG1) %

OR

+C3010(ARG1)%

ARGUMENTS:

ARG1 = COMPLETE ROUND HEP, HEAT, APDS OR TP LOT NUMBER

ASUH

AUMBER:

4086

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

BATCH

PURPOSE:

To provide a summary data list for a group of lots qualified by a legal "where" clause. Data provided for each lot in the group includes lot number, date, disposition, malfunction, velocity, pressure and range data by phase.

USAGE:

\*ASUM(ARG1)% OR \*C4086(ARG1)%

ARGUMENTS:

ARG1 = A legal where clause to qualify a group of lots

EXAMPLE:

\*ASUM (C4 EQ M374A2 AND MEAN VELOCITY GT 850)\$

BSUM

NUMBER:

4087

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

BATCH

PURPOSE:

To provide a summary data list for all lots containing a specific M-number. Data returned includes lot number, date, disposition, malfunction, velocity, pressure and range data by phase ordered by lots.

the second of th

USAGE:

\*BSUM(ARG1) % OR \*C4087(ARG1) %

ARGUMENTS:

ARG1 \* The M-Number of interest

EXAMPLL:

\*BSUM(M374A2)%

CSUM

NUMBER:

4088

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

INTERACTIVE

PURPOSE:

To provide a summary data list for all lots of a particular caliber and type for a specific time period. Data provided number, date, disposition, malfunction, pressure, velocity and range data by phase.

USAGE:

\*CSUM(ARG1,ARG2,ARG3,ARG4)

OR

\*C4088(ARG1,ARG2,ARG3,ARG4)\$

ARGURENTS:

ARGI = CALIBER (105 MM or 4.2 INCH)
ARG2 = TYPE (HE, MP, ILLUM, HEP)
ARG3 = INITIAL SEARCH DATE MM/DD/YY
ARG4 = FINAL SEARCH DATE MM/DD/YY

**EXAMPLE:** 

\*CSUM(81FM,HE,01/01/74,01/31/74)% LISTS SPECIFIED DATA FOR ALL 81124 HE ROUNDS FOR JANUARY 1974.

# SAMPLE OUTPUT:

partendorappezza entretentaria mantendorappezzanten baranten entreten entreten entreten entreten entreten entre

CS	SUM					
	-ACC		TEST SUFF. 18/75	ARY		
LOTNUMEEK	TE\$1	DATE	STATUS	PHASE		PALFUNCTIONS
**						
~~~***********************************	01/15	71974			TNCP"	
LS-067-106	U1/U4	/1974	ACCEPTEL	_	TMCB	1 Ru PAJOR-NULL
				R-A 9		MOVE
LS-067-109	01/10	/1574	ACCEPTED	k-# 1		MOVE
				R-4 9		3 RD MAJCR-NULL
LS-067-110	91/1 <sub>c</sub>	/15/4	ACCEPTED	k-A 1		NONE
			ACC=1176		INCR.	- 110VE
LS-067-121	01/24	/1974	ACCEPTEL		TNCE.	NONE 1 FISFIRE -NLLL
10.047.110		12676	ACCEPTED	K-A 9		HOVE
LS-067-112	01/31	/1974	MCCEPTED	R-4 9		FONE
MA-007-0280	01.49	/1574		R-1 9		PONE
MA-007-026U	01/22			VEL+7		
				KANGE		
HL-136-098	61 /02	/1974	ACCEPTED		INCR	MONE
111150-050	01704	,,,,,,			114CR	1 RU FAJUK-NELL
MA-136-099	01/22	/1974	ACCEPTED		INCR -	I'ONE
114 200 077	42/22	.,			TNCF	NOVE
MA-136-100	61/31	71974	ACCEPTED "		INCP "	NONE
11/1-250 200	01,01	.,			TUCK	1:OVF
	MŁĄTI VEL	S.D.	MEAN PRESS	MAX PRESS	MEAN RANGE	S.D. RANGE
		_				12.6
	347.00	2.20		81	1025	13.4 39:7
	872.00	2:00	- 75	01	1034	11.7
	347.00	1.60	80		4746	
	873.00	2.70 2.30	00	02	1040	12.8
	350.00	1.8G	<del>79</del>	82-	4695	
	*873.00** 345.00	1.80	• • •	<b>-</b>	980	8.4
	865.00	2.70	- 75-	77-	4279	•
	348.00	1.60	.,	• •	1026	
	866.00	2.50	77	79-		•
- ~						
	347.00	2.20			.1053.	12,9.
	868.00	1.85	80	82	4568	41.7
-	352.00	2.30			1035	13:7
		7 40	77	76	4485	33.3
	862.00	3.10			1100	0010
	862.00 865.00	2.50		<del></del>	42 <del>98</del> 1023	

The second of th

CROSS

NUMBER:

4090

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

INTERACTIVE

PURPOSE:

To obtain a listing of ballistic test results for a complete round lot and the fuze and propellant lots associated with it. The listing is on a local file named CROSS. This string is normally used immediately preceeding C4091\*ACROSS. CROSS must be batched to a line printer. (BATCH, CROSS, PRINT, AM, AXXX).

water the said of the states the land with the

USAGE:

\*CROSS(ARG1) % OR \*C4090(ARG1) %

ARGUAENTS:

ARG1 = Complete round lot number

EXAMPLE:

\*CROSS (MA-136-073) \$

ACROSS

NUMBER:

4091

DATA BASE:

ARTIL

SUGGESTED OPERATING NODE:

INTERACTIVE

PURPOSE:

To obtain a listing of ballistic test results for a complete round lot and the fuze and propellant lots associated with it. This string is normally used after string C4090\*CROSS which will display the propellant and fuze lot numbers on the TTY. Data is listed on a local file named CROS. CROS must be batched to a line printer.

USAGE:

\*ACROSS(ARG1,ARG2)% OR \*C4091(ARG1,ARG2)%

EXITS
BATCH, CROS, PRINT, HERE, BM.

ARGUMENTS:

ARG1 = Propellant lot number

ARG2 = Fuze lot number

EXAMPLE:

\*ACROSS (CIL-68518, MA-071-028) %

TALLY

NUMBER:

4030

DATA BASE:

ARTIL

SUGGLETED OPERATING MODE:

BATCH OR INTERACTIVE

PURPOSE:

TO TALLY FREQUENCY OF OCCURRENCE IN DATA BASE OF EACH CALIBER, TYPE AND M NUMBER.

USAGE:

\*TALLY\*\*

OR

\*C4030\*\*

## SAMPLE OUTPUT:

TALLY

*******	***********	****	***********
ELEMENT	- CALIEEK		
******	**********		**********
FREGUENC	Y VALUL		Y · VALUE
		- 219	r1
1 736	HELP	11	M11.00
•	105 FF	- 19	F242
47	166 PF	171	73U1A3
17	152 MH	- 31	#302A1
414	46 55	7	*366A1
54	4.2 li	37	#3U7A1
44	57 n#	145	#314A5
545	66 44	1	7518
468	• • • • • • • • • • • • • • • • • • • •	ī	7329A1
1	90 h#	วง	P335A2
		23	7344A1
10	OWIGNE AMERICA	24	#346A1
		207	8374A2
2521	OCCURRENCES	. 80	7375A2
444444	*****	61	#363
-	*****	39	7.39242
FLFLFMI		16	7393A2
	*****	2	F395
<b>LHERBENC</b>	•••	75	7466
41.		- 22	E467A1
35 14		17	7411A3
	APERS	 b	743A1
i 2	ar-1	1.56	F455
184	ELANN HE	. 39	7456A1
13		266	745A4
73 88		65	#49U
23		10	2454
156		122	₹563 <b>∧1</b>
24	HELF 1956 HEF	95	F6UA2
24	ner HEF-T	4	K67
572	ILLUP	10	F724A1
312	- <del>-</del> - · ·	13	M724E1
8		250	M63A3
198		4	- XH546
13		35	UHIGUE VALUES
- 86			
122		2339	OCCURRENCES
122	<b>#</b> 3	*	

2281 GLCUKKEACES

STRING: TYPESUM

NUMBER: 4050

DATA BASE: ARTIL

SUGGESTED OPERATING HODE: BATCH

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER,
TEST DATE AND FINAL DISPOSITION FOR ALL LOTS
OF GIVEN TYPE. DATA ARE SORTED BY CALIBER,

TYPE AND LOT MUMBER.

USAGE: ±TYPLSUM(ARG1) %

OR •C4050(ARG1)%

ARG1 = ITEM TYPE

EXAMPLE: \*TYPESUM(IIE) %

ARGUMENT SUMMARY: ARG1 - HE

ARGUIENTS:

illum

SYDKE

() STRING: CALSUM NUMBER: 4051 DATA BASE: ARTIL SUGGESTED OPERATING MODE: BATCH PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER, TEST DATE, AND FINAL DISPOSITION FOR ALL LOTS OF GIVEN CALIBER. DATA ARE SORTED BY TYPE AND LOT NUMBER. USAGE: \*CALSUM(ARG1) % OR \*C4051(ARG1) % ARGUMENTS: ARG1 = CALIBER EXAMPLE: \*CALSUM(105%)% ARGUMENT SUMMARY: ARG1 = 4.2 IN60 HM 81 221 105 MM etc.

CALTYPE

NUMBER:

4052

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

BATCI

PURPOSE:

TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER, TEST DATE, AND FINAL DISPOSITION FOR ALL LOTS OF GIVEN CALIBER AND TYPE. DATA ARE SORTED BY CALIBER, TYPE AND LOT NUMBER.

USAGE:

\*CALTYPE(ARG1,ARG2) \$

OR

\*C4052(ARG1,ARG2)\*

ARGUMENTS:

ARG1 = CALIBER

ARG2 = ITEM TYPE

EXAMPLE:

\*CALTYPE(105MM, fie) §

ARGUMENT SUMMARY:

ARG1 = 4.2 IN

12: 00

81 XI

105 PM

ARG2 = IIE

SHOKE .

ILLUM

0

Self the condition of the control of

STRING: DATACARD

JUMBER: 4060

DATA BASE: ARTIL

SUGGESTED OPERATING MODE:

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER,
TEST DATE AND FINAL DISPOSITION FOR ALL LOTS
HAVING DATA CARD INFORMATION. DATA ARE SORTED

**BATCII** 

BY CALIBER, TYPE AND LOT NUMBER.

USACL: \*DATA CARD\*\*

OR

\*C4060\*\*

NODATACARD

NUMBER:

4061

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

BATCH

PURPOSE:

TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER, TEST DATE AND FINAL DISPOSITION FOR ALL LOTS MISSING DATA CARD INFORMATION. DATA ARE SORTED BY CALIBER, TYPE AND LOT NUMBER.

AND THE STATE OF THE PARTY OF T

USAGE:

◆NO DATACARD\*%

OR

\*C4061\* \$

•

DISPOSITION

NUMBER:

STRING:

4070

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

BATCII

PURPOSE:

TO PROVIDE SUMMARY LISTING OF CLAIBER, TYPE, LOT JUMBER, M NUMBER, TEST DATE AND FINAL DISPOSITION OF ALL LOTS WITH GIVEN FINAL DISPOSITION. DATA ARE SORTED BY CALIBER,

TYPE AND LOT NUMBER.

USAGE:

\*DISPOSITION(ARG1) %

OR

+C4070(ARG1) %

ARGUMENTS:

ARG1 - LOT DISPOSITION

EXAMPLE:

\*DISPOSITION(REJECTED)\$

ARGUNENT SUMMARY:

REJECTED

PENDING

ARG1 = ACCEPTED

DATESUM

NUMBER:

4080

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

BATCH

PURPOSE:

TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER, TEST DATE, AND FINAL DISPOSITION FOR ALL LOTS BETWEEN TWO TEST DATES. DATA ARE SORTED BY TEST DATE, CALIBER, TYPE AND LOT NUMBER.

USAGE:

\*DATESUM(ARG1,ARG2)}

OR

\*C4086(ARG1, ARG2)%

ARGUNENTS:

ARG1 = START TEST DATE MM/DD/YY

ARG2 = END TEST DATE MM/DD/YY

EXAMPLE:

\*DATESUM(03/01/74, 03/31/74)\*

ALL DATA FOR MARCH 1974 SUMMARIZED

C.

0

DATA BASE COMP

STANDARD CONTROLL STANDARD STA

SUMMARY

NUMBER:

4000

DATA BASE:

COMP

SUGGESTED OPERATING MODE:

BATCII

PURPOSE:

TO LIST TYPE, LOT NUMBER, M NUMBER, TEST DATE, AND FINAL DISPOSITION FOR ALL LOTS. DATA ASSORTED BY TYPE, LOT NUMBER AND M

NUMBER.

USAGE:

\*SULMARY\*\$

OR

\*C4000\*\$

PROP

NUMBER:

4040

DATA BASE:

CCMP

SUGGESTED OPERATING HODE:

BATCH ONLY

PURPOSE:

TO PROVIDE ACCEPTANCE, TEST SUMMARY, AND PROPELLANT DESCRIPTION SHEET DATA FOR USER SELECTED PROPELLANT LOT NUMBER. THE FOLLOWING DATA ARE LISTED.

- a). GENERAL LOT INFORMATION
  b). MEASURED CHARACTERISTICS
- c). RECOMMENDED CHARGE DATA
- d). DIMENSION DATA
- e). SUPPORT EQUIPMENT SUMPLARY

USAGE:

\*PROP(ARGI) \$

OR

\*C4040(ARG1) %

ARGUMENTS:

ARG1 = PROPELLANT LOT NUMBER

EXAMPLE:

\*PROP (CIL-69090)\$

LISTS ACCEPTANCE TEST SUMMARY AND PROPELLANT DESCRIPTION FOR PROPELLANT LOTICIL-69090.

FUZE

NUMBER:

4060

DATA BASE:

COYES

SUGGISTED OPERATING MODE:

BATCH ONLY

PURPOSE:

TO PROVIDE ACCEPTANCE TEST SUMMARY, DATA CARD SUMMARY AND COMPONENT FAILURE SUMMARY FOR ONE USER SELECTED FUZE LOT NUMBER. THE FOLLOWING DATA ARE LISTED:

Control of the second of the s

- a). GENERAL LOT INFORMATION
- b). TEST IDENTIFICATION DATA
- c). TEST HEASUREMENT SUMMARY
- d). FUZE DATA CARD SUMMARY
   e). FUZE COMPONENT FAILURE SUMMARY
- f). COMMENT INFORMATION

USAGE:

\*FUZE(ARG1) \$

OR

\*C4060(ARG1)\$

ARGUNENTS:

ARG1 = FUZE LOT NUMBER

EXAMPLE:

\*FUZE(MA-071-015)\*

LISTS \*CCEPTANCE TEST SUMMARY DATA CARD SUMMARY AND COMPONENT FAILURE SUMMARY FOR \*S524A6 FUZE LOT MO-071-015.

IGNCART

NUMBER:

4070

DATA BASE:

COMP

SUGGESTED OPERATING HODE:

BATCH ONLY

PURPOSE:

TO PROVIDE ACCEPTANCE TEST SUMMARY FOR ONE IGNITION CARTRIDGE LOT NUMBER. THE FOLLOWING DATA ARE LISTED:

with the state of the state of the state of the

- a). GENERAL LOT INFORMATION
- b). TEST IDENTIFICATION AND MEASUREMENT SUMMARY
- c). COMMENT INFORMATION

USAGE:

\*IGNCART(ARG1) \$
OR

+C4070(ARG1) %

ARGUMENTS:

ARG1 - IGNITION CARTRIDGE LOT NUMBER

EXAMPLE:

\*IGNCART(SGK-003-052) \$

LISTS ACCEPTANCE TEST SERMARY FOR 11285 IGNITION CARTRIDGE LOT SCK-003-053.

STRING: TALLY

NUMBER: 4030

DATA BASE: COMP

SUGGESTED OPERATING MODE: BATCH OR INTERACTIVE

PURPOSE: TO TALLY FREQUENCY OF OCCURRENCE IN DATA

BASE OF EACH CALIBER, TYPE AND M NUMBER.

USAGE: ±TALLY+\$

OR

+C4030+ %

TYPESUM

NUMBER:

4050

DATA BASE:

COMP

SUGGESTED OPERATING MODE:

BATCH

PURPOSE:

TO LIST TYPE, LOT NUMBER, M NUMBER, TEST

DATE AND FINAL DISPOSITION FOR ALL LOTS OF SPECIFIED TYPE. DATA IS SORTED BY LOT NUMBER

AND HIRUWSER.

USAGE:

\*TYPESUM(ARG1) %

OR

\*C4050(ARG1)%

ARGUNEATS:

ARG1 = ITEM TYPE

CXAPPLE:

\*TYPESUM(FUZE)\*

ARGUMENT SUMMARY:

ARG1 = FUZE

HEAD ASHBY

IGN CART

**PROPELLANT** 

DATA BASE LAW



DATA BASE WEAPON

SUMARY

AUNBER:

4000

DATA BASE:

WEAPON

SUGGESTED OPERATING HODE:

BATCH

**PURPOSE:** 

TO LIST CALIBER, MODEL NUMBER, TUBE NUMBER, GUN NUMBER AND COUNDS FIRED FOR ALL TUBE AND GUN NUMBERS. DATA ARE SORTED BY CALIBER, MODEL NUMBER, EINE NUMBER, GUN NUMBER AND ROUNDS FIRED.

USAGE:

\*SIMMERALE

OR

~C4000~%

RIFLED

NUMBER:

4010

DATA BASE:

WEAPON

SUGGESTED OPERATING MODE:

BATG! ONLY

d).

PURPOSE:

TO LIST STARGAGE INSPECTION DATA FOR RIFLED WEAPONS WITH USER SELECTED TUBE NUMBER AND GLN NUMBER. THE FOLLOWING INFORMATION IS LISTED:

a). GENERAL GUN/TUBE INFORMATION

GIAIBER HEASURENENT DATA

- b). TUBE MEASUREMENT DATA
- c). PULLOVER HEASHRENENT DATA

USAGE:

\*RIFLED(ARG1,ARG2)%
OR

\*C4010(ARG1,ARG2)\*

ARGUMENTS:

ARG1 = TUBE NUMBER

ARG2 = GUN NURSER

EXAMPLE:

\*RIFLED(5620,2100)%

LISTS RIFLED WEAPON DATA FOR TUBE 5620, GUN 2100

85

SM.OTH

NUMBER:

4320

DATA BASE:

WEAFUN

PURPOSE:

SUGGESTED OFFRATING MODE: BATCH ONEY

AND GUN NUMBER. THE FOLLOWING INFORMATION IS LISTED:

a). GENERAL GUI/TUBE INFORMATION
b). SMOOTH BORE MUZZLE DATA

TO LIST STARGAGE INSPECTION DATA FOR SMOOTH

BORE KEAPONS WITH USER SELECTED TUBE-NUMBER

USAGE:

SR

ARGU!ENTS:

AREL - TUBE NUMBER

\*SHOOTH(ARG1,ARG2)%

≠C=020(ARGI,ARG2)%

ARGZ = GUN NUMBER

EXAMPLE:

≪MO0Tli(5116,1124)%

HISTS SMOUTH BORE DATA FOR TUBE 5116,

GW 1124

:56

DATA BASE METEO

SUMMARY

Market State of the State of S

NJMBER:

4000

DATA BASE:

METEO

SUGGESTED OPERATING MODE:

BATCH ONLY

PURPOSE:

TO LIST DATE, PROVING GROUND, RELATED FIRING RECORD, TIME, WIND DIRECTION, MINIMUM WIND VELOCITY, MAXIMUM WIND VELOCITY, BAROMETRIC PRESSURE, TEMPERATURE, AIR DENSITY, PRECIPITATION AND CEILING FOR USER SELECTED DAYS AND PROVING GROUND. DATA ARE SORTED BY DATE, PROVING GROUND, AND TIME.

USAGE:

\*SUMMARY (ARG1, ARG2, ARG3) \$
OR

\*C4000(ARG1,ARG2,ARG3)%

ARGUMENTS:

ARG1 = START DATE MI/DD/YY

ARG2 = END DATE : 11/DD/YY
ARG3 = PROVING GROUND

EXAMPLE:

\*SUMMARY(01/01/75,01/31/75,JEFFERSON) \$

LIST METEOROLOGICAL INFORMATION FOR 1 JANUARY 1975 TO 31 JANUARY 1975 AT JEFFERSON PROVING

GROUND.



SUMMARY

NUMBER:

4000

DATA BASE:

CHECK

SUGGESTED OPERATING MODE:

BATCH

PURPOSE:

· ()

TO PROVIDE SUMMARY LISTING OF CHECK DATA BASE INFORMATION. DATA PRINTED INCLUDES FOR

- 1). NUMERIC VARIABLES WITH MAX/MIN BOUNDS
  - a). DATA BASE NAME
  - b). COMPONENT NUMBER
  - c). ELEMENT NAME
  - d). SQIEMA NUMBER
  - e). WORD BOUNDARY WITHIN SCHEMA
  - f). MINIMUM PERMISSIBLE VALUE
  - g). MAXIMUM PERMISSIBLE VALUE
- ALPHANUMERIC VARIABLES WITH EXACT COMPARE VALUES
  - a). DATA BASE NAME
  - b). COMPONENT NUMBER
  - c). ELEMENT NAME
  - d). SCHEMA KUMBER
  - e). WORD BOUNDARY
  - f). PERMISSIBLE EXACT COMPARE VALUES
- 3). NUMERIC/ALPHANIMERIC VARIABLES NOT CHECKED
  - a). DATA BASE NAME
  - b). COMPONENT NUMBER
  - c). ELEMENT "AVE
  - d). SCHE .: " ER
  - e). MORL MINE RY WITHIN SCHEMA

DATA ARE SORTED BY DATA BASE NAME, SCHEMA NUMBER AND WORD BOUNDARY.

USAGE:

\*SIRMARY\* \$

OR

\*C4000\*&

O

STRING:

NUMERIC

XUMBER:

4001

DATA BASE:

CHECK

SUGGESTED OPERATING NODE:

BATCH

PURPOSE:

TO PROVIDE SUMMARY LISTING OF NUMERIC VARIABLES

SUBJECTED TO MAX/MIN LIMIT CHECKS. THE

FOLLOWING IMPORMATION IS LISTED.

- a). DATA BASE NAME
- b). COMPONENT NUMBER
- c). ELEMENT NA.CL
- d). SCHEMA NUMBER
- e). WORD BOUNDARY WITHIN SCHEMA
- f). MINIMARA PERMISSIBLE VALUE
- g). MAXIMUM PERHISSIBLE VALUE

DATA ARE SORTED BY DATA BASE NAME, SCHEMA

AND WORD BOUNDARY.

USAGE:

\*NUMERIC\* \$

OR

\*C4001\*\*

ALPHA

NUMBER:

4002

DATA BASL:

CHECK

SUGGESTLD OPERATING MODE:

BATCH

PURPOSE:

TO PROVIDE SUMMARY LISTING OF ALPHANUMERIC VARIABLES SUBJECTED TO EXACT COMPARE CHECKS.

THE FOLLOWING INFORMATION IS LISTED.

- a). DATA BASE NAME
- b). COMPONENT NUMBER
- c). ELEMENT NAMEd). SCHEMA NUMBER
- e). WURD BOUNDARY WITHIN SCHEMA
- f). PLRHISSIBLE EXACT COMPARE VALUES

DATA ARE SORTED BY DATA BASE NAME, SCHEMA NUMBER AND WORD BOHNDARY.

USAGE:

\*ALPHA\* %

OR

\*C4002\* %

NOLIMITS

NUMBER:

4003

DATA BASE:

CHECK

PURPOSE:

SUGGESTED OPERATING MODE:

BATCH

TO PROVIDE SUBMARY LISTING OF CHECK DATA BASE NUMERIC AND ALPHANUMERIC VARAIBLES NOT SUBJECT TO LIMIT OR EXACT COMPARE CHECKS. THE

FOLLOWING INFORMATION IS LISTED.

a). DATA BASE NAME

b). COMPONENT NUMBER

c). ELEMENT NA'E

d). SCHEHA NUMBER

e). WORD BOUNDARY WITHIN SCIENA

DATA ARE SORTED BY DATA BASE NAME, SCHEMA NUMBER AND MORD BOUNDARY.

USAGE:

\*NOLIMITS\* %

OR

\*C4003\*%

## APPENDIX B

Routine Number	Routine Name	Page Number
0	COMMENT	95
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ROUTINE NO .:

ROUTINE NAME: COMPARINT

To provide capability of user inserted comments in ARIES input stream. PURPOSE:

AS COMMENT < User TEXT > S USAGE:

OR

C < User Text >

↑ Col. 1

ROUTINE NO.:

ROUTINE NAME: OUTPUT

PURPOSE: To

To provide capability of user modification of ARIES IO

and program termination procedures.

USAGE:  $\Delta$  \$00TPUT < PARAMETERS > \$

PARAMETERS:

0

LIST DATA FILE LIST Indicator

= 0 (Default)

Do not provide list of input files

= 1 provide list of user data files (Data in first 10 files listed) ROUTINE NO.:

ROUTINE NAME: BASIC

2

PURPOSE:

adunka ingenggungih dan bipatan mangangan ang ang akan ang mangangan bang ang pangan bang pangan pangan pangan

To compute basic statistical parameters for user selected input data. Statistical output includes:

Number of Observations

Standard Deviations

Variance Covariance Matrix Correlation Matrix

Using option "IOVER" the user may optionally request the following additional tests to be performed on each input data file.

- 1. CHISQ Goodness of Fit for Normal Distribution
- 2. 1-Way Analysis of Variance (GE 2 input
- groups)
  3. Pooled Mean and Variance Estimate (GE
- input groups)
   T-test for difference in means (2 input
- groups)
  5. F-test for difference in Variance (2 input
- groups)

  5. Bartletts test for homogeneity of Variance (GE 2 input groups).

USAGE: A \$ 1

△ \$ BASIC < PARAMETERS > \$

PARAMETERS:

LIST na

nata File List Indicator

- = 0 (Nefault) Do not provide list of data files
- 2 1 Provide list of user data files (active)
- Il <u>Nata File Inclusion Indicator</u>
  - = 0 (Default)
    First input file undefined
  - k File number k contains data for first variable in analysis

12	Additional Data File Inclusion Indicators
13	= 0 (Default)
14	2nd to 10th analysis variables undefined
15	= k File number k contains data for 2nd to 10th
16	variables in analysis
17	·
18	
19	
I 10	
IOVER	Failsafe Indicator
IOVER	= 0 Do not perform data check
IOVER	= 1 F-test (No override) 2 input groups
IOVER	= 2 Bartletts Test (No override) 2 or more input groups
IOVER	= 3 T-test (No override) 2 input groups
10VER	= 4 Pooled mean and variance (No override 2 or more input
	groups

To override failsafe checks add 10 to IOVER, e.g. IOVER=11 performs F-test with override  $\,$ 

If override not indicated, program does not output user requested test results if following assumptions are not met:

Test	Assumption	
F	Each sample comes from normally distributed population. Test each sample for normality at $\infty$ = 0.95 using CHISQ goodness of fit test.	
Bartlett	Same as above	
t-test	Same as above	
Sp <sup>2</sup>	The sample variances must be homogeneous. Use Bartlet-'s test to decide significance at $< C = 0.95$ .	
AUOUA 1 Mare	Same as 5×2	

0

## Computational Procedure

Let K<sub>L</sub> = vector of observations for i<sup>th</sup> sample
N = number of samples

then:

The maximum likelihood of the centroid or mean value is an unbiased estimator and is given by the column vector n-

$$m = \frac{1}{N} \sum_{i=1}^{N} \chi_{i}$$

The maximum likelihood estimator D of the dispersion or variance covariance matrix is

$$D = \frac{1}{N} \sum_{i=1}^{N} (X_i - m)(X_i - m)'$$

or computationally

$$D = \frac{1}{N} \left[ \sum_{i=1}^{N} X_{i} X_{i}^{i} \right] - m m'$$

The standard deviations are obtained by taking the square root of the diagonal elements of D.

The elements of the maximum likelihood estimator of the correlation matrix R are computable from the variance covariance matrix D as

ROUTINE NO.:

()

3

ROUTINE NAME:

MREG

PURPOSE:

To perform a multiple regression analysis on one dependent variable and from one to five independent

variables.

USAGE:

△\$ MREG < PARAMETERS > \$

PARAMETERS:

MREG parameters are same as those used for SREG except:

FLEV has no function in MREG

## Computational Procedure

Consider the 2 variable regression model

$$Y = B_0 + B_1 Z_1 + B_2 Z_2 + E$$

where  $\textbf{B}_0,~\textbf{B}_1,~\text{and}~\textbf{B}_2$  are referred to as the raw regression weights and  $\textbf{Z}_1,~\text{and}~\textbf{Z}_2$  are the unscaled input data.

Let S be the sum of squares and cross product matrix computed as

follows

$$S = \begin{bmatrix} S_{11} & S_{12} \\ S_{21} & S_{22} \end{bmatrix}$$

$$S_{j\ell} = \sum_{i=1}^{N} (Z_{ji} - \overline{Z}_{ji}) (Z_{\ell_{i}} - \overline{Z}_{\ell}) \quad f_{i} \ell^{-1} I_{i} 2$$

The data can be transformed as follows

$$X_{\partial^2} = \frac{(Z_{rc} - \bar{Z}_{\dot{b}})}{S_{\dot{b}\dot{f}}^{1/2}} \qquad y_c = \frac{(\gamma_c - \bar{\gamma})}{S_{\dot{b}\dot{b}}^{1/2}}$$

where

where

$$S_{\gamma\gamma} = \sum_{i=1}^{N} (Y_i - \overline{Y})^2$$

The regression equation then becomes

$$y = \alpha_1 x_1 + \alpha_2 x_2 + \varepsilon$$

$$\alpha_i = \beta_i \left( \frac{Sit}{Suu} \right)^{1/2}$$

The correlation matrix of the Z's is

$$\Gamma_{12} = \frac{S_{12}}{(S_{11}S_{22})^{1/2}} = \Gamma_{21}$$

The correlation between Z<sub>i</sub> and Y is written

$$F_{jy} = \frac{S_{jy}}{(S_{jj}S_{yy})^{1/2}}$$

$$S_{yy} = \sum_{i=1}^{N} (Z_{ji} - \overline{Z}_{j})(Y_{i} - \overline{Y})$$

where

letting  $a_1$ ,  $a_2$  be the least squares estimates of  $\alpha_1$ ,  $\alpha_2$  the normal equations for the regression become

$$\begin{bmatrix} 1 & \Gamma_{12} \\ \Gamma_{21} & 1 \end{bmatrix} \begin{bmatrix} \alpha_1 \\ \alpha_2 \end{bmatrix} = \begin{bmatrix} \Gamma_{1}y \\ \Gamma_{2}y \end{bmatrix}$$

therefore

$$a_{1} = \frac{(r_{1}y - r_{1}z_{2}y)}{D}$$

$$a_{2} = \frac{(r_{2}y - r_{1}z_{1}y)}{D}$$

where  $b = (1 - r_{12}^{2})$  = the determinant of the correlation matrix.

The raw regression weights  $B_0$ ,  $B_1$ ,  $B_2$  can be estimated as follows

$$B_{1} = a_{1} \left( \frac{S_{313}}{S_{11}} \right)^{1/2}$$

$$B_{2} = a_{2} \left( \frac{S_{312}}{S_{22}} \right)^{1/2}$$

$$B_{3} = \overline{Y} - B_{1} \overline{Z}_{1} - B_{2} \overline{Z}_{3}$$

\*\*\*Caution\*\*\*In computing the values of  $a_1$  and  $a_2$  above one must divide by  $b=1-r_{1,2}^{-2}$ , the determinant of the correlation matrix. As a result when  $r_{1,2}^{-2}$  approaches 1, D is nearly zero (collinearity) and the solution to  $a_1$  and  $a_2$  becomes indeterminate. In the above situation, the two variables represent in fact the only 1 independent equation.

allow the same because the continue

ROUTINE NO .:

ROUTINE NAME: SREG

PURPOSE: To perform a stepwise regression analysis on one dependent variable and from one to five independent

variables.

USAGE:

△\$ SREG < PARAMETERS > \$

PARA TETERS:

LIST Data File List Indicator

> = 0 (Default) No not provide list of input files used in

regression = 1 Provide list of input files used in regression

File number k contains dependent variable

IDEP DEPENDENT Variable Indicator

> = 0 (Default) Dependent Variable undefined

INDI Independent Variable Indicator

= 0 (Default)

1st Independent Variable undefined = k File number k contains 1st independent variable

IND2 Additional Independent Variable Indicator

IND3 (Default) IND4

2nd - 5th Independent variables undefined INDS

= k File number k contains 2nd - 5th Independent variables

FLEV Tolerance Level

= k

.00001 (Default)

Tolerance level is x

**IRES** Pesidual Print Indicator

(Default) Do not print residuals

= 1 Print residuals

# IPLT Regression Data Plot Indicator

- = 0 (Default)
  Do not plot independent variables versus dependent variable
- = 1 Plot Data

## ITRAN1 IND1 Transgeneration Code

- O (Default) Do not transgenerate file IND1
- k Transgenerate file IND1 using transgeneration k and transgeneration constant RTRAN1. (See computations procedures below).

## RTRAN1 IND1 Transgeneration Constant

- = 0 (Default) Transgeneration constant = 0.
- Transgeneration constant for file IND1 = X. (See restrictions in computational procedures below).

## Transgeneration Codes for

ITRAN2 IND2 ITRAN3 IND3 ITRAN4 IND4 ITRAN5 IND5

### Transgeneration Constants for

RTRAN2 IND2 RTRAN3 IND3 RTRAN4 IND4 RTRAN5 INDS

### COMPUTATIONAL PROCEDURE:

Definition of Transgeneration Codes:

Let:

C = RTRAN
X = Variable before transgeneration

ITRAN	Transgeneration	Restrictions
1	$x \rightarrow \sqrt{x}$	x ≥ 0.
2	$x \rightarrow \log_{10}(x)$	x > 0.
3	$x \rightarrow \log_e(x)$	x > 0.
4	x-→e <sup>x</sup> ັ	
5	$x \rightarrow 1/x$	$x \neq 0$ .
6	x->x + c	
7	x ⇒cx	
3	$x \rightarrow x^{C}$	x ≥ 0.
9	$x \rightarrow \sin(x)$	
10	x>-cos(x)	
11	x→c <sup>X</sup>	c > 0.
12	If $x \ge c$ $x \to 1$	

on intermediate intermediate keener hyperone enterment in attended

### Computational Procedure

Management of the second second

Primary for the Control of the Contr

0

0

Stepwise regression can be used in data analysis to obtain the best fit in a least squares sense of a set of observations of independent and dependent variables by an equation of the form:

$$y = b_0 + b_1 x_1 + b_2 x_2 + \dots b_N x_N$$

where y is the dependent variable;

x1, x2 . . .xn are the independent variables; b0, b1 . . .bn are the coefficients to be determined

In the stepwise procedure outlined below, several intermediate regression equations are formulated by adding one variable at a time to the regression.

The variable added is that one which makes the greatest improvement in "goodness of fit." The coefficients represent the best values when the equation is fitted by the specific variables included in the equation.

An important property of the stepwise procedure is based on the facts that (a) a variable may be indicated to be significant in any early stage and thus enter the equation, and (b) after several other variables are added to the regression equation, the initial variable may be indicated to be insignificant. The insignificant variable will be removed from the regression equation before adding an additional variable. Therefore, only significant variables are included in the final regression.

The criterion used to select the  $\mathbf{x_i}$  variable to add (or remove) from the regression is as follows:

- If the variance contribution of a variable in the regression is insignificant at a specified F-level, this variable is removed. If no variable is to be removed then the following criterion is used.
- If the variance reduction obtained by adding a variable to the regression is significant at a specified F-level, this variance is entered.

ROUTINE NO.:

5

ROUTINE NAME: LOTPLT

PURPOSE:

To plot from one to three variables versus lot number.

USAGE:

△\$LOTPLT \( \text{PARAMETERS} \)

**>** s

PARAMETERS:

IDEP Lot File Indicator

= 0 (Default) File containing lot numbers is undefined

k File number k contains lot numbers

IND1 Variable Number 1 Indicator

= 0 (Default) 1st variable undefined. \*\*\*ERRØR\*\*\*

k File k contains 1st variable

IND2 <u>Variable Number 2 Indicator</u> = 0 (Default) 2nd variable undefined

k File k contains 2nd variable

IND3 Variable Number 3 Indicator

= 0 (Default) 3rd variable undefined

= k File k contains 3rd variable

YMIN Y Axis (IND1, IND2, IND3) Minimum
= -99. (Default) Program scales data

X User provided minimum value for Y axis

YMAX Y Axis (IND1, IND2, IND3) Maximum

= -99. (Default) Program scales data

= X User provided maximum value for Y axis.

YBAR1 Y Axis Control Limit Minimum

= -99. (Default) No control line printed

X Constant line printed at Y = X

YBAR2 Y Axis Control Limit Maximum

= -99. (Default) No control line printed

X Constant line printed at Y = X

#### RESTRICTIONS:

- 1. If only 1 variable plotted IND1 used
- 2. If only 2 variables plotted IND1, IND2 used
- 3. If YMIN  $\neq$  -99., YMAX  $\neq$  -99.
- 4. If YBAR1 # -99., YBAR2 # -99.
- A maximum of 1024 data points may be plotted for each variable.

ROUTINE NO.: 6

ROUTINE NAME: PLØT

PURPOSE: To provide printer plot of one dependent variable versus

from one to five independent variables. Routine has provisions for user input of axis scaling and plot

dimensions.

USAGE: ASPLOT CPARAMETERS > 3

PARAMETERS:

IDEP Dependent Variable Indicator

= 0 (Default)
Dependent Variable undefined

= k File number k contains dependent variable

IND1 Independent Variable Indicator No. 1

= 0 (Default)
1st independent variable undefined

= k File number k contains 1st independent variable

IND2 Additional Independent Variable Indicators

IND3 = 0 (Default)

IND4 2nd - 5th Independent Variables undefined

= k File number k contains 2nd-Sth independent variables.

LENX X axis (Dependent Variable) Length Indicator

= 120 lines (Default)

= k x axis is k lines long (K = 200) k must be multiple of 10

LENY Y Axis (Independent Variable) Length Indicator

= 120 spaces (Default)

= k y axis is k spaces long (K<sub>max</sub> = 120). k must be multiple of 10

XMIN X Axis Minimum Value Indicator

=\_99 (Default) Program Scales Data

= x User Provided minimum value for x axis

the and the state of the state

XMAX X Axis Maximum Value Indicator

= -99. (Default) Program scales data

x User provided maximum value for x axis

YMINI Y Axis(1st Independent Variable) Minimum Value Indicator

= -99. (Default) Program scales data

= x User provided minimum value for y axis

Y:11N2 Additional Y axis Minimum Value Indicators

Action same as for YMINI except independent variables

2-3-4-5 referenced

YMAXI Y Axis (1st Independent Variable) Maximum Value Indicator

= -99. (Default) Program scales data

= x User provided maximum value for y axis

YMAX2 Additional Y axis Maximum Value Indicators

YNAX3
YMAX4

Action same as for YMAX1 except independent variables

YIAX5 2-3-4-5 referenced

RESTRICTIONS:

Y2:1N3

- 1. A maximum of 1024 observations for the dependent variable (x-axis) and 5 x 1024 = 5120 independent variable observations may be plotted. Fxcess data points are neglected with warning message issued.
- If user provides non default value for any axis scaling parameter he must also provide values for all other applicable scaling values.

ROUTINE NO.:

ROUTINE NAME: HIST

PURPOSE: To provide printer histograms of user selected data

files.

USAGE: △ \$HIST < PARAMETERS > \$

PARAMETERS:

NBAR Histogram Interval Indicator

= 10 (Default) Histogram contains 10 intervals.

= k Histogram contains k intervals 1 k 30

NSP <u>Histogram Spacing Indicator</u>

= 4 (Default) Histogram bar spacing interval is 4 spaces.

= 0 or 1 llistogram bar spacing interval is 0 spaces or 1 space respectively.

RUP Histogram Upper Round Indicator
(Used with RLWN below)

= -99. (Default) Program scales data into NBAR equidistant

categories from min value to max value.

= x User provided upper bound of histogram program scales data into NBAR + 2 intervals with:

Interval 1 containing data PLOK
Interval RBAR + 2 containing data POP
Remaining intervals are equidistant with size

RLØW Histogram Lower Bound Indicator (Used with RHP above)

= -99. (Default) Program scales data into NBAR equi-

distant categories from min value to max value

= x User provided lower bound of histogram. (see
discussion of RUP above for complete details).

IDEP Histogram Variable Indicator

= 0 (Default) Histogram file undefined

k Plot histogram of file k

RESTRICTIONS: 1. If non default value of RUP is inputted, a non-default value of RUM must also be inputted.

Similarly, if RLM has non-default value, RUP must have non-default value. If this criterion is not net, a message is issued and default criterion used.

ROUTINE NO.:

ROUTINE NAME: TIME

PURPOSE: To plot from one to five independent variables versus

a time parameter such as date. A variety of user

scaling options are included.

USAGE: ASTINE (PARAMETERS) S

PARAMETERS: (see PL#T)

All parameters used in routine TIME are identical

to those used in PLØT except:

XVIIN X Axis Instial Date Indicator

≈ -99. (Default) Program scales data

= x User provided initial date for x-axis.

This date must be in format YYITMN.

XMAX X Axis Final Date Indicator

= -99. (Nefault) Program scales data

= x User provided final date for x axis.
This date must be in format YYMMD.

THE SECRETARY AND A STATE OF THE SECRETARY ASSESSMENT AS A STATE OF THE SECRETARY ASSESSMENT ASSESSMENT AS A STATE OF THE SECRETARY ASSESSMENT AS A STATE OF THE SECRETARY ASSESSMENT AS A STATE OF THE SECRETARY AS A STATE OF TH

YMIN Y Axis Minimum Indicator

= -99.(Default) Program scales data. Y axis starts at minimum value in file IDEP = X Y axis starts at X

YMAX Y Axis Maximum Indicator

= -99.(Default) Program scales data. Y axis ends at maximum value in file IDEP.

X Y axis ends at X.

YBAR1 Y Axis Minimum Reference

= -99. (Default) No reference line provided.

X Reference line plotted at X. YBAR1 < YBAR2

Y Axis Haximum Reference

= -99. (Default) No reference line provided.

= X Reference line plotted at X. YBAR2 > YBAR1.

#### RESTRICTIONS:

YBAR2

0

- 1. System 2000 files must be provided for all of
  - a. IDEP Data
  - b. IND1 Date
  - c. IND2 LØT
- If YBAR1, YBAR2 option used one or both of following conditions must be met:
  - a. YMAX and YMIN NE -99.
    - . XMAX and YMIN NE -99.
- Maximum number of points plotted equals 1024.
   All points in excess of 1024 are ignored.

the started and the control of the c

ROUTINE NO.:

POUTINE NAME:

TABLE

PURPOSE:

To print selected statistical tables for use in interpreting results of user requested statistical routines.

USAGE:

△STABLE < PAPAMETERS

#### PARAMETERS:

#### ITABLE

## Table Indicator

- **=** 0 (Default) No table printed.
- = 1 Normal distribution
- **=** 2 Students t-distribution ALPHA = .001, .005, .01, .02, .05 (TABLE gives area in both tails.
- = 3 CHISO Distribution ALPHA = .001, .005, .01, .025, .05, .1 (TABLE gives area in single tail)
- F-Distribution ALPHA = .01, .05 (TABLE gives area in single tail).

# APPENDIX C

The state of the s

Definition Name	Page No.
ARTIL	117
COMP	124
Lan	131
WEAPON	135
TW075	138

DEFINITIONS

STATEM MELENSE NUFBER. 2.305 DATA BASE NAME IS ARTIL CLFINITION RUBLER HAIN BASE LYCLE bども LALIGER TRACE ATTAL HITE SUME FUTURE LEGITIONS). TIPE (MAIL X(10) WITH SUIT FUTURE ACUITIONS) 3\*\_10T (LALL X(12)1. 44 P GUNGER (Ende > (10) with Some Futuke applitions) LUANTITY (RUL-KET INTEGER HUMBER 5(6)) ٠,\* PARLEACTURER (MARL X(10) WITH SCRE FUTURE AUDITIONS) 10111el LISH GRADE X(10) RITH SOFE FOTORE ADDITIONS). TIGAL DIST (BARL X(10) WITH SOME FUTURE AUDITIONS) FROM THE CHOUSE (MARK ACTO) WITH SOME EUTURE FUBLITICIES) 1 (1\* ILSI LAIL (LAIL) \_\_112 ASSERBLY\_UATE, (UALE) 12\* ITHE TEST (NOL-KLY WANT ) (10)) 13\* FIRING RECCHO HOTHER (NOL-REY MARL XIIII) 14\* TIEM RONENCLATURE (GUN-NET TEXT X (601) 15\* LAUSE OF MEDECTION (NON-MEY TEXT X(MUL) FELATED FIRING NECCHU (NON-KEY NAME X(10)) CURRECTION (HOW-NEY MAME X(10)) 17\* SPECIFICATION (MASE X(13)) 18\* 12\* THAMING (MAPL X (19) ) 160\* PALLISTIC ILSI 16FU (NO) 110+ TEST HAVE GLAME X (16) IN 180) 111\* PHASE (MAPE A(10) IN 100) 112\* HEF VS TEST (MARE XXXX IN 106) 115\* LAIL FIRED (UAIL IT. 10L) 1144 APPROX 11ml FIRED (NUM-KEY 18TEGER HUMBER 9999 IN 101) 115\* AZIPUIT (KC.,-KLY ULCINAL HUTELK 999.99 IR 106) 116\* TAPELT UISTANCE (NUN-KEY INTEGER AUNDER 9(5) IF 1001 FINING PUSITION (NUM-NEY HAPE X(5) IE 100) 11/4 118\* WIND VILCOITY IMON-KET INTELER NUMBER 999 IN 1001 115+ Winte Line (10k (40k-MEY INTEGER burnet 999 If 100) 120\* PROF\_CEG (BAFE X(16) ID 100) 121+ TEST REMARKS (NUM-RET TEXT X (60) 11: 100) 1224 Tupl hirelk (hare X(20) in 100) TEST SATTLES (RUR-NET INTEGER LUTBER 9(5) IN 100)

000 01 00 01 01 00 00 00 00 00
200* PHASE SUMMARY-HE WP (RG IN 100) 210* VEL N-HE (NON-KEY INTEGER NUMBER 999 IN 200)
211* VEL PLAN-HE (DECIMAL NUMBER 9(5),99 IN 200)
212* VEL CORR MEAN-HE (DECIMAL NUMBER 9(5).99 IN 200)
213* VEL STD-HE (DECIMAL NUMBER 999,99 18 200)
214* VEL MAX-HE (NON-KEY DECIMAL NUMBER 9(5).99 IN 200)
215# VEL MIN-HE (MON-KEY DECIMAL NUMBER 9(5),99 IN 200)
22C+ PRESS N-HE (RON-KEY INTEGER NUMBER 999 IN 200)
221* PRESS MEAN-HE (INTEGER NUMBER 9(6) IN 200) 222* PRESS MAX-HE (INTEGER NUMBER 9(6) IN 200)
222* PKESS MAX-HE (INTEGER NUMBER 9(6) IN 200) 223* PRESS MIN-HE (INTEGER NUMBER 9(6) IN 200)
230* RANGE N-ME (NON-KEY INTEGER NUMBER 999 IN 200)
231* RANGE FEAL-HE (INTEGER NUMBER 9(5) IN 200)
232* RhG STC (NON-KET DECIMAL NUMBER 999.9 IN 200)
233* RANGE MAX-HE (NON-MEY INTEGER NUMBER 9(5) IN 200)
234* RANGE MIN-HE (NUN-KEY INTEGER NUMBER 9(5) IN 200;
240* DEFL N-HE (NOH-KEY INTEGER NUMBER 999 IN 200)
241* DEFL MEAR-HE (DECIMAL HUMBER 9999.9 IN 200)
242* OEFL STD-HE (HON-KEY DECIMAL NUMBER 999.9 IN 206.
250* THACER N-HE (HON-MEY INTEGER NUMBER 999 IN 200) 251* TRACER PEAN-HE (DECIPAL NUMBER 99.9 IN 200)
252* TRACER STU-HE (NON-KEY DECIMAL NUMBER 99.9 IN 2001
2534 TRACER FIN-HE (NON-NEY DECIMAL NUMBER 99.9 IN 200)
2544 FLAG-HE (INTEGER NUPBER 9 IN 200)
20G* R BY H 1NFO-HE MP (NG IN 200)
261* ROUNC-HE (NON-KET INTEGER NUMBER 9(5) IN 280)
282* SAPPLE-HE (NON-KLY INTEGEN NUMBER 999 IN 280)
283+ PROJ FACT-HE (NON-MEY HAME X(9) IH 280)
265+ FUZE FACT-HE (NON-KEY NAME X(9) IN 280) 265+ VEL-ME (NON-KEY DECIMAL NUMBER 9999-9 IN 280)
205* VEC-PE (NON-KEY INTEGER BUMBER 9999 IN 280)
287* DEFL-HE (NON-KEY INTEGER NUMBER 9999 IN 28G)
268* PRESS-HE (NON-KEY INTEGER BUMBER 999 IN 2801
269* WEIGHT-HE (NON-KEY DECIFAL NUMBER 999.99 IN 280)
290* REPARA-HE (NON-NEY NAME X(9) IN 260)
291* RFLAG-HE (INTEGER HUMBER 9 IN 260)
292* DEFECT-HE INAME X(10) II- 280)
295* TRACER INFU-HE WP (RG IN 28U)
296* TRACE FUNC (NON-KEY MANE XXXX IN 295) 297* TRACE TIME (NON-KEY DECIMAL NUMBER 99.9 IN 295)
300* PHASE SUPPARY-ILLUM (RG IN 100)
SUI* EFFECT ILLUM M (NON-KEY INTEGER NUMBER 999 IN 300)
3024 FFFECT ILLUM MAXIMUM (DECIMAL NUMBER 999.9 IN 300)
303+ EFFECT ILLUM MINIMUM (DECIMAL NUMBER 999.9 111 300)
510* BURST HT IS CHUN-KEY LITEGER NUMBER 999 IN 3001
311* BURST HT MAXIMUM (INTEGER NUMBER 9999 IN 303)
3124 HURST HT MINIAUM (INTEGER NUMBER 9999 IN 300)
320* HANGE N-ILLUM (NON-KEY INTEGER NUMBER 999 IN 300) 321* HANGE REAN-ILLUM (INTEGER NUMBER 9999 IN 300)
321* HANGE FEAN-ILLUM (INTEGER NUMBER 9999 IN 300) 322* RANGE FAX-ILLUM (INTEGER NUMBER 9999 IN 300)
323* RANGE FIN-ILLUN (INTEGER NUMBER 9999 IN 300)
330* FUZE TIPE N (NON-KEY INTEGER NUMBER 999 IN 300)
331 FUZE TIME MEAN (DECIMAL NUMBER 99 59 IN 300)
352* FUZE TIME STU (MOH-MEY DECIMAL NUMBER 99.99 IN 340)
333+ FUZE TIPE MAXIMUM (DECIMAL HUMBER 99.99 IN 300)
334+ FUZE TIME MINIMUM (DECIMAL HUMBER 99.99 IN 300)
3354 FUZE TIPE LOT DEF (DECINAL ALMBER 999.999 IN 300)
336* FUZE TIME CORRECTION (NON-KLY DECIMAL NUMBER 9.995 IN 300)

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340* CHUIE DELAY N (NON-KEY INTEGER NUMBER 999 IN 300)
341* CHUTE DELAY MAXIMUM (DECIMAL NUMBER 99.9 IN 300)
3424 CHUTE CELAY MINIMUM (DECIMAL NUMBER 99.9 IN 300)
350* VEL N-ILLUM (NON-KLY INTEGER NUMBER 999 IN 300)
351* VEL PAX-ILLUM (INTEGER NUMBER 9999 IN 300) 352* VEL MIN-ILLUM (INTEGER NUMBER 9999 IN 300)
352* VEL MIN-ILLUM (INTEGER NUMBER 9999 IN 300)  360* DEFL N-ILLUM (NON-KEY INTEGER NUMBER 999 IN 300)
561* DEFL *AX-ILLUM (INTEGER NUMBER 9999 IN 300)
362+ GEFL MIN-ILLUM (INTEGER NUMBER 9999 IN 300)
370* DESCENT RATE N (NON-KEY INTEGER NUMBER 999 IN 300)
371* DESCENT RATE MAXIMUM (DECIMAL NUMBER 99.9 IN 300) 372* DESCENT KATE MINIMUM (DECIMAL NUMBER 99.9 IN 300)
373* FLAG-ILLUK (INTEGEN NUMBER 9 IN 300)
350* K BY R IAFO-ILLUM (RG IN 300)
381 ROUNG-ILLUK (MON-KEY INTEGER NUMBER 9(5) IN 366.)
362* SAMPLE-ILLUM (NOM-KEY INTEGER NUMBER 999 IN 360)
363* EFFECT ILLUM (NON-KEY DECIMAL MUMBER 999.9 IN 380)
265* RANGE-ILLUM INCN-KEY INTEGER NUMBER 9999 IN 3801
366* FUZE TIME UNCOKK (NON-KEY DECIMAL NUMBER 99,59 IN 360)
367* CHUTE DELAY (400-KEY DECIMAL NUMBER 99.9 IN 2841)
368* VEL-ILLUM (NON-KEY INTEGER NUMBER 9999 IN 380)
369* OEFL-ILLUH (NON-KEY INTEGER HUNGER 9999 IN 386)
350* DESCENT RATE (NON-KEY DECIMAL NUMBER 99.9 IN 300) 351* REMARK-ILLUM (NON-KEY HAME X15) IN 380)
392* PRESS-ILLUK (NON-KEY INTEGER NUMBER 999 IN 380)
393+ RELAG-ILLUM (INTEGER NUTBER 9 IN 360)
394* DEFECT-ILLUM (HAPE A(10) IN 360)
400* PHASE SUPPARY-HEP HEAT APOS TO (RG IN 100) 410* VEL N-HEP (NUN-KEY INTEGER HUMBER 999 IN 400)
4114 VEL REAR-HEP (INTEGER NUMBER 9999 IN 400)
412* VEL CORR MEAN-MEP (INTEGER NUMFER 9999 IN 400)
4134 VEL STG-HEP (DECIMAL NUMBER 99.9 IN 400)
414* VEL EXT VAK-HEP (NUN-KEY INTEGER HUMBER 999 IN 400)
420* PRESS N-HEP (NON-KLY INTEGER NUMBER 999 IN 400)
422* PRESS STO-HEF (HON-KEY DECIMAL NUMBER 99.9 IN 900)
423* PRESS FAX-HEF (INTEGER NUMBER 999 IN 400)
4244 PRESS FIR-HEF LINIEGER MURBER 999 IN 4001
450* PE N (NON-KEY INTEBER NUMBER 999 II. 400)
431* PE HOR (GECIMAL NUMBER 9.99 IN 400)
440* DISP N (NOH-NLY INTEGER MUMBER 999 IN 400)
441* DISP HCR (INTEGER MUNBER 999 IN 400)
442* DISP VERT (10/16/14 NUMBER 999 IN 400)
443* FLAG-HEP (INTEGEN NUMBER 9 IN 400) 444* DISP HON STU (DECIMAL NUMBER 999.99 IN 400)
445* DISP VERT STD (UECIMAL NUMBER 999.99 IN 400)
460* R BY R INFO-HEP HEAT APDS TP (RG IN 400)
461* ROUND-HEP (NON-KEY INTEGER NUMBER 9(5) IN 460}
462* SAMPLE-HEP (NON-NEY INTEGER RUMBER 999 IN 460) 463* PROJ FRCT-HEP (NUN-KEY NAME XXXX IN 460)
464* VEL-HEP (NUM-KEY DECIMAL NUMBER 9999.9 IN 460)
465+ HOR COORD-HEP (NON-KEY INTEGER NUMBER 999 IN 460)
466* VERT COURD-HEP (NON-KEY INTEGER RUMBER 999 IN 460)
467* PRESS-HEP (NON-KEY INTEGER NUMBER 999 IN 460)
468* WEIGHT-HEP (NON-REY DECIMAL NUPBER 999.99 IN 460) 469* TRACER FACT-HEP (AOH-KEY NAME XXXX IN 460)
470+ CEFL-HEF (NON-KEY DECIMAL NUMBER 99.9 IN 460)
471* REMARK-HEP (NON-KEY NAME X(5) IN 460)
472* RFLAG-HEP (INTEGER KUMBER 9 IN 460)
473* DEFECT-HEP (NAME X(10) IN 460)

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480* HEP HEAT PLATE INFO (RG IN 460)
461* P (NON-KEY INTEGER NUMBER 9 IN 480)
482* EHD HOR (NON-KEY DECIMAL NUMBER 9.99 IN 480)
483* EHD VERT (NON-KEY DECIMAL NUMBER 9.99 IN 480)
150* DEFECT SUMMARY (RG IN 100)
151* DEFECT NAME (NAME X(10) IN 150)
152* NO OF OCC (INTEGER NUMBER 999 IN 150)
153* DEFECT NOTE (NON-KLY NAME X(80) IN 150)
900* DATA CARD INFO (RG)
901* COMPONENT NAME (NAME X(10) IN 900)
902* CUMPONENT M NUMBER (NAME X(10) IN 900)
910* COMPONENT LOT INFO (KG IN 900)
911* COMPUNENT LOT (WAME X(12) IN 910)
912* COMPONENT QUANTITY (NON-KEY INTEGER NUMBER 9(6) IN 910)
913* COMPONENT DATE (NON-KEY DATE IN 910)
920* ARTILLERY SUPPORT EQUIPMENT INFO (RG)
921* EGUIP MAPE (MANE X(10) IN 920)
922* EGUIP MODEL (NON-KEY NAME X(10) IN 920)
923* EGUIP LOT (NON-KEY NAME X(12) IN 920)
980+ COMMENT INFO (KG)
9814 COMMENTS (TEXT X(100) IN 960)
4001* ALDS (RG)
4002* ZZZZ (NON-KEY TEXT X120) IN 4001)
1000* PLLP INFO (NG)
1010* CUMMAND NAME (NAME X(10) IN 1000)
1020* CUMMANU INFO (NG IN 1000)
1030* SUBCCMPANG WARE (MARE X(10) IN 1020)
1031* SUBCCMPAND SEGUENCE (NON-KEY INTEGER NUMBER 99 IN 1020)
10404 SURCEMEAND INFO (RE IN 1020)
1050+ SUECOMPAND TEXT (NON-KEY TEXT X(72) IN 1040)
1051* SEQUENCE NUMBER (NON-KEY INTEGER NUMBER 999 IN 1040)
4003* 2221 (STHING (MESSAGE FILE IS OUTPUTSPRINT/NULL SUPPRESS-STUE S
UPPRESS/222%))
4004* ARIES (STRING (MESSAGE FILE IS DUMPECONTRULEDBN IS ARIESEMESSAG
E FILE IS CUTPUIS PRINT/NULL SUPPRESS.STUB SUPPRESS//2228))
4005* DISPLAY (STRING (PRINT/NAKE, STUB, GROUP, NULL SUPPRESS, REPEAT SUP
PKESS/BY ERIRY.C1.C2.C3.C4.C5.C6.C7.C8.C9.C10.C12.C13.L14.C1C0.
C200,C300,C400,C920,C980 WH C3 EQ *1*%*ZZZ1*%))
4000* SUMMARY (STRING (LIST/MEPEAT-TITLE D(25)ARTIL LOT SUMPARY-L(7)C
ALIBER. L(7) TYPE.L(12)LOT NUMBER.L(8)M NUMBER.L(10)DATE T
EST-L(10) DISP/C1-C2-C3-C4- C10-C8-OB C1-C2-C3 WF C3 EXISTSX)
,
4060* UATACAHU (STRING (LIST/REPEAT SUP.TITLE D(20)ARTIL DATA CARDS P
KESENT. L(7)CALIBER.L(7)TYPE.L(12)LOT NUMBER.L(8)B NUMBER.
L(10)DATE TEST.L(10)DISP/C1. C2.C3.C4.C10.C8.OB C1.C2.C3 WH C3
LXISTS ANG C901 EXISTS%))
4061* NODATACAPO (STRING (LIST/REPEAT SUP-TITLE DIZOJARTIL DATA CARDS
HISSING. L(7)CALIBER.L(7)TYPE.L(12)LOT NUMBER.L(A)M NUMBER.
L(10)DATE TEST-L(10)DISP/C1. C2.C3.C4.C10.C8.08 C1.C2.E3 WH C3
EXISTS AND COOL FAILS%))
4070* DISPOSITION (STRING (LIST/REFEAT.TITLE D(20) ARTIL SUPPARY BY D
ISP. L(7)CALIBER.L(7)TYPE.L(12)LOT NUMBER.L(8)F MUMBER.L
(10)DATE TEST-L(10)DISP/C1. C2.C3.C4.C10.C8.08 C1.C2.C3 MH C3
EXISTS AND CO EU +1+%))
4050* TYPESUM (STRING (LIST/MEPEAT.TITLE D(25)ARTIL LOT SUMPARY BY TY
PE,L.7)CALIBER,L(7)TYPL,L(12)LOT NUMBER,L(8)M NUMBER,L(10)DATE
TEST.L(10)DISP/C1.C2.C3.C4. C10.C6.06 C1.C2.C3 bH C3 EXISTS
AND C2 ED #1%))
4052* CALTYPE (STRING (LIST/HEPEAT-TITLE DISCHARTIL LOT SUMMARY BY CA
LIBER TYPE, L(7)CALIBER,L(7)TYPE,L(12)LOT NUMBER,L(8)# NUMBER,
L(10)DATE TEST-L(10)DISP/C1. C2.C3.C4.C10.CA.OR C1.C2.C3 WH C3
EXISTS AND C1 EL *1* AND C2 E0 *2*5))

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CALSUM (STRING (LIST/REPEAT.TITLE D(25)ARTIL LOT SUMPARY BY CAL
       IBER.L(7)CALIBER.L(7)TYPE.L(12)LOT NUMBER.L(8)M NUTBER.L(10)CAT
       £ TEST.L(10)DISP/C1.C2.C3.C4. C10.C8.06 C1.C2.C3 HF LZ EXISTS A
       NU C1 EQ +1+%))
      DATESUM (STRING (LIST/MEPEAT, TITLE D(20) ARTIL SUMPARY BY DATE.
4080*
                   L(7)CALIBER.L(7)TYPE.L(12)LOT NUMBER.L(A)P NUMBER.L
       (10) DATE TEST.L(10) DISP/C1. C2.C3.C4.C10.C8.08 C10.L1.C2.C3 WH
        C3 EXISTS AND C10 GE *1* AND C10 LE *2*%))
4030*
       TALLY (STRING (TALLY/EACH/C1%TALLY/EACH/C2%TALLY/EACH/C4%))
      FILE (STRING (REPORT FILE 1S
                                         *1*%PRINT/BLOCK.STUB SUP.NULL.
3333*
       SINGLE SPACE/S DESCRIBE #2*$ PRINT #2* WH #3*$1)
3000*
       ILLUMFR (STRING (*LAB2* *1*% *LAB3* *ILAB2* *ILAB2A*; *DCLIS1*
                    FRIKT/NULL SUP. HAME/C981 LH SAMES))
4040*
      HEWPER (STRING (*LAUZ* *1*% *LAB3*
                                                         *LADE * DCLIST
                    PRINT/NULL SUP. NAME/C981 WH SAS))
4043*
      LAB3 (STRING (PRINT/NAME. NULL SUP. STUP. INDENT/C10.C11.L12.C12.C
                    C17 AH SAMES PRINT/GROUP/ SY ENTRY.C100.C200.C3C0.
       (400 kH SAFES))
4042*
       LAB2 (STRING (LIST/NULL SUP.TITLE D(30) ACCEPTANCE TES) SUMMARY
       +L(12)+LOT MUMBER+B12)+L(7)+CALIBER+B(2)+L(6)+ TYPE+B(2)+L(8)+M
        NUMBER.L(8)+GUANTITY.L(10)MANU-+FACTURER.L(10)INTTIAL+ DISF.L
       (10)FINAL+DISP.L(10)PROVING+GROUND/+LaB2A*))
4041*
      LAB2A (STRING (C3.C1.C2.C4.C5,C6.C7.C8.C9 WH LOT EC))
4046*
      LABS (STAING (LIST/TITLE L(10)+TEST hame+8(2)+L(10) TEST+PHASE
       +6(2)+L(3)VEL+ #+8(2)+L(6) VEL+ MEAN+B(2)+L(6) VEL+STU+L(4)FRE
       5+ N.B(2).L(4)PRES+MEAN.B(2).L(4)PRES+MAX.B(2).L(4)FRES+MIN.L(3
       1686+ 8.8(2).L(5)RN6+ALAH.B(2).L(5)AAG+STU.L(4)DEFL+ A.B(2).+LA
4047*
      LABSA (STRING (L(S)DEFL+MEAN+b(2)+L(5)DEFL+STD+L(5)TRACE+
       2),L(5)THACE+HEAN/C110.C111.C210.C212,C213.C220.C221.C222,C223,
       C230,C231,C232,C240,C241,C242,C250,C251 WH SA))
4048*
      LAB6 (STRING (LIST/REPLAT SUP, TITLE G(30) HOUND BY ROUNG DATA.L(
       12)+LOT GUMBER.L(10)+PHASE.L(6)RGUMD+GUMBER.L(6)SAMPLE+MUMBER.L
       (6)PROJ+FUNC.L(6)FUZE+ACTION.L(6)+ VEL.L(5)+RANGE.L(4)+DEFL.L(
       4)+PRES.L(6)+WEIGHT.L(10)+REMARKS/ +LAB6A+5))
      LABGA (STRING (C3.C111.C281.C282.C283.C284.C285.C286.C287.C288.
4049*
       C269,C296 LH SA11
4021*
       LGUIP (STRING (LIST/REPEAT SUP-TITLE DIAD)SUPPORT EQUIPMENT SUM
       maky,L(12)+LOT NUMBER,L(10)+EGUIP NAME; (12)+EGUIP horeL,L(20)+
       EGUIP LOT/C3.C921.C922.C923 wh SA%))
      HEPHEATER (STRING (*LAUZ* *1*) *LAB3* *HLAB2* *HLAB2* *DCLIST
5010*
       * *EQUIP*
                   PRILITHULL SUPINAME/ C981 by SAMES))
3011*
      HLARS (STRING (LIST/REPEAT SUP-TITLE DISD)ROUND BY ROLAD DATA-L
       (12)+LOT NUMBER.L(10)+PHASE.L(6)ROUNU+NUMBER.L(6)SAMPLE+NUMBER.
       L(6)PROJ+FUNC.L(6)+VELUC.L(5)COORD+ HOR.L(6)COOKD+VEHT.L(4)+FRE
       S.L(6)+WEIGHT.L(6)TRACER+FUNC.L(4) AZ+DEFL.L(10)+REMARKS. *HLAB
5012*
       HLAB2A (STRING (L(3)+ P.L(4)EHD+HOR.L(4)EHD+VERT))
5013*
       hLAB28 (STRING (C3.C111.C461,C462,C463,C464,C465,C466,C467,C466
       .C469.C470. C471.C481.C482.C483 WH SAME))
      HELP (STRING (PRINT/NULL SUP. INDENT. REPEAT SUP. STUP SUP. TREF/CI
1060*
       010-C1030-C1050-GB C1051-C10S1 WHERE C1010 EQ HELPRPHINT/STUE-R
       EPEAT/%))
107C*
       HLLP1 (STRING (PRINT/HULL SUP, INDENT, REPEAT SUP, STUB SUP, TREE/
       C1010.C1030.C1050.UB C1031.C1U51 WHERE C1010 EO *1*x FRINT/STUR
       *HEPEAT/%))
1080#
      HELPZ (STRING (PHINT/NULL SUP, INDENI, REPEAT SUP, STER SUP, GROLP/
       C1010.
                    C1030.C1050.06 C1051 WHERE C1010 E9 #1# AND C1030
       LU +2+SPRINT/STUB-REPEAT-TREE/S))
1090*
      PELPCOMMAND (STRING (LIST/NULL SUP, TITLE U(5) ARIES CUPPAND SLAM
       ANY-L(12)+CUMMAND MARE-B(20)/ C1010 WHERE C1 E0 HELP=1)
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2050*
       F456A1 (STRING (REPORT FILE IS SEKING *AI* *A2* *1* AND TEST DA
       TE LE *2*%
                    *A3* *A4* *A5* *A6*))
2051#
       A1 (STRIKG (PRINT/RULL-REPEAT SUP.BLGCK.STUB SUPPRESS-GROUP/2))
       AZ (STRING (PRINT COUNT C3 WHERE C4 E0 M456A1 AND TEST DATE GE)
2052*
2053*
       P3 (STRING (PKINT COURT C3 WHERE SAME AND C7 E9 ACCEPTEDS PRINT
        COUNT CO WHERE SAME AND CT EN REJECTEDS PRINT COUNT CO WHERE S
       AME AND L7 EG PROV ACCEPS))
2054*
       A4 (STRING (LIST/NULL SUP-TITLE L(12)+LOT NUMBER-L(5)+PHASE-L(8
       IVEL MEAL+UNCORR.L(8)VEL MEAN+CORR.L(8)VEL+STD.L(8)+FE HOR.L(8)
       +PE VERT/C3.C112.C411.C412.C415.C431.C452.08 C3.C112 WHERE SAME
       2.))
       AS (STRIEG (LIST/TIBLE L(12)+LOT NUMBER, L(10)+PHASE, L(10)+N TES
2055*
       1.L(20)+hALFUNCTIUNS/C3.C111.C410.C122.UB C3.C111 WHERL SAME AN
       D C111 EU PLATE OR C111 EU TRACERS))
2066*
       AT ISTRING INCPURT FILE IS TEMPS UNLUGE/HEPEAT-NULL/LSu1-C903-0
       & C401 WHERE SAME AND C401 EW PROJECTILE UR C401 EG FLZE OR C40
       1 EG FRIFER UK C901 EG TRACER))
4006*
       COMPLUT (STRING (PRINT/NAME, STUD, GROUP, NULL SUPPRESS REPEAT SUP
       PhESS/BY ENTRY. C1. C2. C3. C4. C5. C6. C7. C8. C9. C10. C12. C12. C14. C9C0.
       LY10 WH C3 EG *1*** 2221*%))
4607*
      CHLOTS (STHING (PRINT/NAME.STUB.GROUP.HULL SUPPRESS.KEPEAT SLPP
       ht55/bY ENTRY.C3.C5.C7.C6.C10 HHERE C911 tQ *1***ZZZ1*2))
4006*
      (SEARCH (STRING (LIST/REPEAT SUP.TITLE D(20)+1*.CP+LCT NUMBER.B
       (3)+L(6)CK+6UART+B(3)+L(10)CR DISP+B(3)+L(10)CR TEST+CATE+B(2)+
       L(10).CCFFONEI:T+WUANT/L3.C5.C7.L10.C912.UB C3.C10 km C511 EQ *1
       ***2221**11
4061*
       LLZSUM (STRING (LIST/KEPEAT SUP-TITLE DIZO) ACCEPTANCE TEST SUM
       FAKY .L(12)LUTRUMBER.L(10)TEST_DATE.L(10)STATUS.L(10)FMASE.L(20
       )MALFURCTICAS.L(5)MLAN+VEL.L(5)S.U.+VEL.L(6)MEAN+PRESS.L(6)MAX+
       PHESS.L(5)PLAN+RANGE.L(5)S.O.+RANGE/*ZZ1SUM*))
4082*
       /2150h (S1king (L3, L10, Co, L111, L122, C211, C213, C221, L22, C231, C2
       32))
4086*
       ASUR (STRING (#ZZZSUM# WHERE #1#2#ZZZ1#4))
4087*
       HOUM (STRING (#222SUM#+Gb C3 WHERE C4 EQ #1#%))
4090*
       CROSS (STRING (REPORT FILE IS CRUSE*LABS* *1* % *LABS* *DCLIST*
        REPORT FILE IS OUTPUTS FRINT/NULL, NAME/C901, C911 WHERE SAME AN
       C (C901 EG PROPELLANT UR C901 EG FUZE)$1)
       ALKUSS (SIRING (LUNIKULEUNN IS COMPERTFORT FILE IS CHCSE*LABI*
       *1*%*LAB2* *FNO! 1* *FRUF2* *PHOP3* *LAB1* *2*% *LAB2* *FUZE1* *
       FLZE2* *FUZE3* *FUZE4* CONTROL SCBIL IS ARTILS REPCRI FILE IS O
       UTPU[%))
      ILLIST (SIRING (LIST/REFEAT SUP-TITLE U(30)DATA CARD SUMMARY-L(
       12)+LOT LUPER, E(10)COMPONERT+ LAME, E(20)COMPONENT+ LOT, E(10)
       CUMPONENT+GUALTITY+L(1U)CUMPONENT+DATE MANU/C3.C901.c911.C912.C
       913 sh SAE))
49802
       CSUR (SILING (*242SUN* +UR C3 WHERE C1 F0 *1* AND C2 E= *2* AND
        C10 GE +3+ PHG C10 LE +4+%))
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ILAB2 (STRING (LIST/REPEAT SUP.TITLE D(30)ROUND BY ROUND DATA. (12)+LOT NUMBER.L(10)+PHASE.L(6)ROUND+NUMBER.L(6)SAMPLE+N' TER. L(6)EFFLCT+1LLUM.L(5)8URST+ hT.L(5)HORIZ+RANGE.L(5)FLZE+; Kt.L (5)CHUTE+UELAT.L(4)+VEL.L(6)+DEFLEC.L(7)DESCENT+ RAIE.L(4: FRE Sell 3003\* ILAB2A (STRING (L(7)+REMARKS/C3.C111.C381.C362.C383.L364.C365.C 366.C387.C388.C389.C390.C392.C391 WH SAME)1 2001\* FILLI (STRING (PRINT/BLUCK.STUB SUPPRESS/# REPORT FILE IS FILE1 DESCRIBE \*1\*% PRINT/HULL/ \*1\* OB C3 PHERE \*2\*%)) 2002\* FILE2 (STRILG (PRINT/U'-OCK.STUB SUPPRESS/% REPORT FILE IS FILE2 DESCRIBE \*1\*% PRINT/NULL/ \*1\*.08 C3 WHERE \*2\*%)) 2003\* FILES (STRING (PRINT/BLUCK.STLB SUPPRESS/% REPORT FILE IS FILES LLSCRIEE +1+% PRINT/NULL/ +1++0B C3 WHERE +2+%)) 2004\* FILLY (STRING (FRINT/BLOCK.STUB SUPPRESS/# REPORT FILE IS FILEY DESCRIBE #1#% PRIMI/NULL/ #1#+OB C3 FHER, #2#%)) 2005\* (STRIKE (PRIDICALUCK+STUB SUPPRESS/% REPORT FILE IS FILE5 DESCRIBE #1+5 PRINT/NULL/ +1++08 C3 WHERE 42+5); 2006\* (STKILG (PHINT/BLOCK+STUB SUPPRESS/% REPORT F LE IS FILE6 DESCRIBE +1+% PRINT/NULL/ \*1++06 C3 WHERE +2+%)) 2007\* FILET (STRIRG (PRINT/BLOCK.STUB SUPPRESS/% REPORT FILE IS FILET LESCHIEE \*1\*% PRINT/NULL/ \*1\*+OB C3 WHERE +2\*%); 2006\* FILES (STRING (PHINT/OLOCK.STUB SUPPRESS/# REPORT FILE IS FILE ULSCRIBE \*1\*% PRINT/NULL/ \*1\*+08 C3 WHERE \*2\*%)) 2009\* FILE9 (STRILE (PRIMI/BLUCK.STUB SUPPRESS/# REPORT FILE IS FILE9 DLSCRIBL \*1 \*% PRILT/NULL/ \*1\*+OB C3 WHERE \*2\*%)) 2010\* FILE 10 (STRING (PRINT/BLOCK STUB SUPPRESS/\$ REPORT FILE IS FILE UESCRIBE #1#% PRINT/NULL/ #1#+OB C3 WHERE #2#%)) 10% 2011\* FILE 11 (STRING (PRINT/BLOCK STUB SUPPRESS/# REPORT FILE IS FILE DESCRIBE \*1\*5 PRINT/HULL/ \*1\*+OB C3 NFERE \*2\*5)1 112 FILE 12 (SIKING (PRINT/BLUCK, STUB SUPPRESS/% REPURT FILE IS FILE 2012\* DESCRIBE #1#% PRINT/NULL/ #1#+OP C3 WHERE #2#%)) 145 2013\* FILE 3 (STRIKE (PRIMI/BLOCK STUB SUPPRESS/\$ REPORT FILE IS FILE LESCRIBE \*1\*5 PRINT/HULL/ \*1\*+OR C3 WFERE \*2\*\$)) 132 2014\* FILE14 (51HIGG (PRINT/BLUCK.STUB SUPPRESS/# REPORT FILE IS FILE 14% LESCRIBE \*1\*\* PRINT/NULL/ \*1\*\*08 C3 WHERE \*2\*\$)) 2015\* FILE 15 (STRILL (PRINT/BLOCK, STUB SUPPRESS/# REPORT FILE IS FILE 15% LESCRIBE \*1+3 PRINT/HULL/ +1\*+OE C3 WHERE +2+%)] 2016\* FILE16 (STRING (PRINT/BLOCK+STUB SUPPRESS/# REPORT FILE IS FILE 16% UESCRIBE \*1\*5 PRINT/NULL/ \*1\*\*OB C3 WHERE #2\*5)) 2017\* FILE17 (STRII:6 (PRINT/LLOCK.STUB SUPPRESS/% REPORT FILE IS FILE LESCHIBE #1#% PRINT/NULL/ #1#+OB C3 WHERE #2#%11 FILE 18 (STRING (FRINT/BLOCK.SIUD SUPPRESS/\* REPORT FILE IS FILE \*3105 LESCRIBE #1#% PRINT/NULL/ #1#+OB C3 WHERE #2#%)} (STRING (PRINT/BLOCK+STUB SUPPRESS/# REPORT FILE IS FILE 2019\* FILE 19 LESCRICE \*1\*% PRINT/NULL/ \*1\*+08 C3\_WFERE \*2\*%)) 17% 2020\* FILE 20 (STAILG (PRINT/BLOCK.STUD SUPPRESS/\$ REPORT FILE IS FILE 20% DESCRIBE #1#3 PRINT/NULL/ #1#+OR C3 WHERE #2#\$1) DEFS (STRING (PR/HAME/MIR C14-COUNT C3-SUM C123 WH C4 2507\* SA\_AND C151 EU #2#%))

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SYSTEM HELEASE GUPBER DATA BASE NAME IS COMP BEFINITION MURLER UATA BASE CYCLE 95 X(10) kiln SOME FUTURE AUDITIONS) CALIBER (NAME TYPE (NAME X(10) WITH SOME FUTURE ADDITIONS) LOT (NAME X(12)) P RUMBER (NAME XIIO) WITH SOME FUTURE ADDITIONS) 5\* LLANTITY (NOW-KEY INTEGER NUMBER 916)) PANDFACTURER (MARL A(10) WITH SOME FUTURE ADDITIONS) 7\* INITIAL LISP CHARL X(10) WITH SOME FUTURE AGRITIONS) FIRAL DISP (MAME X(10) WITH SCHE FUTURE AUDITIONS) 9\* PROVING CHOUND CHAPE XCIDE WITH SOME FUTURE ADDITIONS 10\* TEST DATE (LATE) 11\* <u>ASSLÄELY LAIL (UAIL)</u> 12\* TYPE TEST (INCH-KET NAME X(10)) 13\* FIRING RECCRE WIFUER (NUM-KEY NAME X (10)) 14\* 11EH NOMENCLATURE (NOM-KEY TEXT X(80)) 15\* TEST WIRLCTUR (ROM-NEY GAME X (101) 18\* SPECIFICATION (NUN-KEY HAME X(10)) CAUSE OF REJECTION (NAME X (80)) 17\* FELATED FIRING RECORD (NON-KEY MARE X(12)) 16\* URANING (NAME X(10)) 19\* PROP TEST TREU (RG) 100\* 101\* THUP CAUSE OF REJECTION (NON-KEY TEXT X (80) IN 100) 102\* PROP RELATED FIRING MECORD (NON-KEY NAME X(10) IN 100) 110\* PERCENT ATTROCELLULOSE (DECIMAL NUMBER 999.99 IN 160) 111\* PERCENT NITROGLYCERINE (DECIMAL NUMBER 999.99 IN 100) PERCENT NITHOGUANIDINE (DECIMAL NUMBER 999.99 IF 100) 112\* 115\* PERCENT LINYL CENTRALITE (DECIMAL NUMBER 999.99 II. 100) 114\* PERCENT ONT (DECIMAL NUMBER 999.99 IN 100) 115\* PERCENT UPA (DECIMAL NUMBER 999.99 IN 100) PERCENT SALT (NON-KEY DECIMAL NUMBER 999.99 IN 100) 116\* PERCENT VOLATILES (NUN-KEY DECIMAL HUMBER 999.99 IN 100) 117\* 118# PERCENT FOISTURE (ULCIMAL NUMBER 999.99 IN 190) 119\* PERCENT GLAZE (RON-KEY DECIMAL NUMBER 999.99 IN 160) 120\* RG (DECIPAL NUMBER 999.99 IN 100) 121\* KF (DECIPAL NUMBER 999.99 IN 100) 122\* CLOSED BOYE STANDARD LOT (NAME X(12) IN 100) HEAT TEST (NOT-KEY NAME X(10) IN 100)

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150* PROP ACCEPTANCE TEST INFO (NG IN 100)
131* PROP TEST PHASE (NAME X(10) IN 130)
132* PROP TEST TEMP (INTEGER NUMBER 9999 IN 130)
155* PROP & FIRED (NUN-KEY INTEGER NUMBER 999 IN 130)
134* PROP & CURS (NON-KEY INTEGER NUMBER 999 IN 136)
135* PROP CHG WY (UECIMAL NUMBER 9999.99 IN 130)
136* PROP MALFUNCTIONS (NAME X(10) IN 130)  140* PAGE CES VEL FPS MEAN (INTEGER NUMBER 9(5) IN 130)
140+ PROP CES VEL FPS MEAN (INTEGER NUMBER 9(5) IN 150) 141+ PROP CORR VEL FPS MEAN (INTEGER NUMBER 9(5) IN 150)
142* PROP VEL FPS STD (VECIMAL NUMBER 999.9 IN 130)
143+ PRUP UBS PRES PEAN (INTEGER NUMBER 9(5) IN 130)
144* PROP PRESSURE SID (INTEGER NUMBER 9(5) IN 130)
145* PROP CALIBRATION LOT (NAME X(10) IN 150)
146* PROP SECUNDARY LOT (NAME X(10) II, 150)
147+ PROP VEL CORRECTION (DECIMAL NUMBER 9(6),999 IN 130)
1464 PROP PRES CORRECTION (DECIMAL NUMBER 9(6).999 IN 150)
1454 PROP LT CURRECTION (DECIMAL NUMBER 9(6), 999 IN 140)
137* HUZ TO COIL DIST (MUN-KEY DECIMAL NUMBER 999.95 IN 130)
136* CUILI TO CUILE DIST (NON-KEY DECIMAL NUMBER 995.55 IN 130) 190* PROP HOUND BY ROUND (RG IN 130)
191* RULAU NUMBER (NUN-KEY INTEGER HUMBER 9(5) IN 190)
1924 SAMPLE AUMBER (MUN-KEY INTEGER AUMBER 999 IN 150)
193* PRESSURE (NON-KEY INTEGER NUMBER 9(5) IN 190)
1944 VELUCITY (AUN-KEY INTEGER NUMBER 9999 IN 190)
195+ FLAG (INTEGER NUMBER 9 IN 190)
196* FROP DEFECT (NAME X(10) IN 190)
150* PROP RECORMENDED CHARGE INFO (RG IN 100)
151* PROF CONFIGURATION (MAME A(10) IN 150)
152* PROP ZUNE (NAME X(10) IN 150) 153* PROP HEC CHG WT INLK (DECIMAL NUMBER 9(6),999 IN 1:0)
155* PROP REC CHG #1 101AL (DECIMAL RUMBER 9(6),999 IN 150)
155* PROP HEC WEL (DECIMAL NUMBER 9(6).999 IN 150)
156* PHOP HEC PRES (UELIMAL HUMBER 9(6),999 IN 150)
160* PROP LIFENSION INFO (RG IN 100)
161* PROP LIMENSICH NAME (MAKE X(10) IK 160)
162* PROP LIKENSILU VALUE (NOW-KEY DECIMAL NUMBER 9595.5999 IN 1
60)
170* PROP SLPPORT EGUIPMENT INFO (RG IN 100)
171* PROP EQUIP NAME (NAME X(10) IN 170)  172* PROP EQUIP NOUEL (NGN-KEY NAME X(16) IN 170)
172* PROP EGUIF FOULL (NON-KEY NAME X(16) IN 170)  173* PROF FGUIF FOI (NON-KEY NAME X(12) IN 170)
200* FUZE TEST INFU (NG)
201* FUZE CAUSE OF REJECTION (NON-KEY TEXT X(80) IN 200)
202* FUZE RELATEL FIRING MECOND (NON-KEY NAME X(10) IN 200)
203* FUZE CCHRECTICH (NON-KEY NAME X(10) IN 200)
220* FUZE PHASE 1NFO (KG 1m 200)
221* FUZE PHASE NAME (NAME X(20) IN 220)
2224 FUZE WEAPOR (NON-KEY MAME X(10) IN 220)
223* FUZE 1: FIRED (NON-KEY INTEGER NUMBER 999 IN 220)
224* FUZE N CONS (NON-KEY INTEGER NUMBER 995 IN 220) 225* FUZE PROF CHG (NAME X(10) IN 220)
226* FUZE SET (NAME X(10) IN 220)
227* FUZE KEVERSE (INTEGER HUMBER 99 Ik 220)
228* FUZE DUDS (INTEGER NUMBER 99 IN 220)
240+ FUZE MEASUREFENT INFO (RG IN 220)
241* FUZE MEAS NAME (NAME X(20) IN 240)
242* FUZE MEAS FEAN (DECIMAL NUMBER 9(5).999 IN 2401
243* FUZE MEAS STO LOECIMAL NUMBER 999.999 IN 240)
244. FUZE KEAS HAXIMUM (NON-KEY DECIMAL NUMBER 9(5), 999 IN 240
245* FUZE HEAS MINIMUM (NUN-KEY DECIMAL NUMBER 9(5),599 IN 240

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900* DATA CARD INFO (KG)
 901* CUMPONENT MAKE (NAME X(20) IN 900)
       CUMPONENT H NUMBER (NAME X(10) IN 900)
  902*
  910* COMPONENT LOT INFO (KG IN 900)
    911* COMPUNENT LOT (NAME X(12) IN 910)
    912* COMPONENT QUANTITY (NON-KEY INTEGER NUMBER 9(6) in 910)
         COMPONENT DATE (NON-KEY DATE IN 910)
    920* COMPORERT TEST INFO (RG IN 910)
     941* COPPCHENT TEST NAME (NAME X(1U) IN 920)
     922*
           CUMPCHERT IN (INTEGER NUMBER 9999 IN 920)
     923*
           COMPONENT FAILURES (INTEGER NUMBER 9999 IN 920)
     CUMBERT INFO (RG)
 951* CUMMENTS (HUN-KEY TEXT X(80) IN 950)
 250* FUZE ROUND BY ROUND (RG IN 200)
         F ROUND NUMBER (NON-KEY INTEGER NUMBER 9(5) IN 2501
         F SAMPLE NUMBER INUN-KEY INTEGER NUMBER 999 IN 2501
         F PRESSURE (NON-KEY INTEGER NUMBER 9(5) IN 250)
   254* F VELUCITY (NUN-KEY INTEGER NUMBER 9999 IN 250)
         F FUNCTION (NAME X(10) IN 250)
   256* FFLAG (INTEGER NUMBER 9 IN 250)
   257* FUZE DEFECT (NAME X(10) IN 250.
300* FRIMER TEST INFO (R6)
 301* PRIPER CAUSE OF REJECTION (NON-KEY TEXT X(AD) IN Anna
 302+ PRIMER RELATED FIRING RECORD (NON-KEY NAME X(10) In 400)
       ERIBER CORRECTION (NUN-KEY LABE X(10) IN 300)
 320* PRIMER PHASE INFO (RG IN 300)
   321+ PRIMER PHASE HAME (NAME X(10) IN 320)
   322*
         PRIMER N (NON-KEY INTEGER NUMBER 999 IN 320)
   3234 PRIMIN PROP CHG (NAME X(10) IN 320)
   524* PRIMER MALFUNCTIONS (NAME X(10) In 320)
   330* PRIFER PHASE MEASUREMENT INFO (RG IN 320)
     331* PRIMER MEAS NAME (NAME X(10) IN 330)
           PRIPER NEAS IN INUN-KEY INTEGER NEABER 999 IN 3301
           PRIMER REAS REAN (GECIMAL NUPBER 9(5).999 IN 330)
           PRICER CEAS MAXIDUM (NON-KEY DECIMAL NUMBER 9151.999 IA 3
           30)
     335* PRIMER REAS DINIMUM INON-KEY DECIMAL NUMBER 9(5).999 IA 3
 350* PRIMER SUPPORT EQUIP INFO (RG IN 300)
   351* PRIMER EGUIP NAME (NAME X(20) IN 350)
   352*
         PRIPER EGGIP MOUEL (NON-KEY NAPE X(10) IN 350)
   353*
         PRIFER EGUIP LOT (NON-KEY NAME X(12) IN 350)
400* IGNITION CART TEST INFO (RG)
       IGH CART CAUSE OF REJECTION (NON-KEY TEXT X(80) II 400)
       Ibn Caki RELAILD FIRING RECORD (CON-KEY NAME X(10) In 400)
       IGN CART CORRECTION (NON-KEY NAME X(10) IN 400)
 40.5*
 420* IGN CART PHASE INFO (RG IN 400)
   421*
         IGN CART PHASE NAME (NAME X(20) IN 420)
   422*
         IGN CART A FIRED INGN-KEY INTEGER NUMBER 999 IN 424)
   423*
         IGN CART & CONS (NUM-KEY INTEGER NUMBER 999 IN 420)
   424*
         IGN CART MALFUNCTIONS (NAME X(10) IN 420)
   425*
         IGN CART UNCORR VEL MEAN (DECIMAL NUMBER 9(5).5 18 420)
   4264
         IGN CART CURK VEL MEAN (DECIMAL NUMBER 9(5).9 IN 420)
         IGN CART VEL STU (NUN-KEY DECIMAL NUMBER 999.99 IN 420)
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METAL PARTS TEST INFO (RG)
        MPTS CAUSE OF REJECTION (NON-KEY TEXT X(80) IN 500)
   502*
        MPTS RELATED FIRING RECORD (NON-KEY NAME X(10) IN 500)
   503*
        MPTS CCRRECTION (NON-KEY NAME X(10) IN 500)
  520*
        MPTS PHASE INFO (NG 15 500)
     521*
           MPTS PHASE NAME (NAME X(20) IN 520)
     522*
           PPTS N FIRED (NON-KEY INTEGER NUMBER 999 IN 520)
           HPTS N CONS (NON-KLY INTEGER NUMBER 999 IN 520)
     523*
     524*
           MPTS PROP CHE (NON-KEY NAME X(10) IN 520)
     525*
           APTS MALFUNCTIONS (NAME-X(10) IN 520)
    530*
           PPTS PEASUREMENT INFO (RG IN 520)
      501*
             MPTS REAS WAME (NAME X(10) IN 530)
      532*
             MPTS MEAS UNCURR MEAN (DECIMAL NUMBER 9(5).999 13 530)
      5534
             MPTS MEAS CORR MEAN (DECIHAL NUMBER 9(5).999 16 =30)
             MPIS NEAS SID (DECIMAL NUMBER 9999.999 IM 530)
      534*
            MPTS HEAS PAXIMUM (NON-KEY DECIMAL NUMBER 9(5),959 IN 530
      555*
             PPIS HEAS MINIMUM (NON-KEY DECIMAL NUMBER 9(5),999 IN 530
   550* MPTS SUPPORT ECUIPMENT INFO (RG IN 500)
          MPTS ECUIP WARE (NAME X(10) IN 550)
     552* HFTS EGUIP MOUEL (NON-KEY NAME X(10) IN 550)
          PPTS EGUIP LOT (NON-KEY NAME X(10) IN 550)
     553*
4001* ALDS (RG)
  40UZ* ZZZZ (NON-KLY TEXT X(2U) IK 4001)
      ILLF INFC (RG)
        CUPRALU MAFE (MATE A(10) IN 1000)
  1020* CUMNARY INFO (RG 15 1000)
   1030* SUBCOFFAME MARE (MARE X(10) IN 1020)
   1031* SUBCUPPARE SEWUREL (HUN-KEY INTEGER NUMBER 99 IN 1020)
    1040* SUBCOFFARD INFO (RG 18: 1020)
      1050* SUBCOMPAND TEXT (AUN-KEY TEXT X(72) IN 1040)
      1001* SEELENCE NUMBER (NON-KEY INTEGER NUMBER 999 IN 1440)
600# FUZE F118 TEST INFO (KG)
  601*
        M116 PHASE (MAPE X(6) 1N 600)
  602* HILE BIAS HASS TIME N (NON-KEY INTEGER NUMBER 99 IN 600)
   6U3*
        MILE BLAS MASS TIME HEAR (DECIMAL NUMBER 999.99 IN 600)
        MITS BIAS PASS TIME STO (DECIMAL NUMBER 999.99 IN 600
        HITE HOTCH DELAY TIME IS INDI-KEY THITEGER NUMBER SO IN 6001
  605*
   606*
        HI18 RUTCH WELAY TIME MEAN (DECIMAL NUMBER 9999.59 In 600)
  607*
        MILE ROTCH CELAY TIME STU (LECIMAL NUMBER 9999.95
  608#
        MIIG ROTOR LELAY TIME -2STD (DECIMAL NUMBER 9999.99 IN 600)
  609*
        MILE HOTCH WELAY TIME +2STO (DECIMAL NUMBER 9999.99 IN 6001
        MILE ROTCH RESISTANCE N (NON-KEY INTEGER NUMBER 59 IN 600)
   610+
  611*
        MITE RUICH MESISTALICE MEAN (DECIMAL NUMBER 99.99 1. LOD)
        M118 ROTCH RESISTANCE STD (DECIMAL NUMBER 99.99 IN 600)
   612*
   613*
        MILE DEAT OLDTH & INUN-KEY INTEGER NUMBER 99 IN 6001
   6.144
        MILE DEAT BEPTH MEAN (DECIMAL NUMBER 9.999 IN 600)
  615*
        MILE DEAT DEPTH SID (DECIMAL NUMBER 9,999 IN 600)
   625*
        MII6 BIAS MASS TIME LOW (INTEGER NUMBER 99 IN 600)
  626*
        MILE BLAS MASS TIME HY (INTEGER NUMBER 49 IN 600)
   6274
        MIIB ROTCH BELAY FIRE LOW (INTEGER NUMBER 99 IN 600)
   628#
        MILE ROTCH HESISTANCE LOW (INTEGER NUMBER 99 IN 600)
   629*
         HITE ROTOR RESISTANCE MY (INTEGER NUMBER 99 IN 606)
  6304
         MILE CENT DEPTH LOW (INTLGER NUMBER 99 IN 600)
        FUZE M118 R BY R (RG 1N 600)
           MILE SEKIAL AU INON-KEY ILTEGER RUBBER 99 IN 6161
     617*
           MILE BLAS MASS FIME (NON-KEY GECIMAL NUMBER 999.95 IN 616)
           MILE ROTOR DELAY TIME (NON-KEY DECIMAL NUMBER 5995.99 IN 61
     619*
    62C+
           MILE HOTOR RESISTANCE (NOT-NEY DECIMAL NUMBER 99.99 IN 616)
     621*
           PILO LENT DEPTH INUN-KEY LECIMAL HUNGER 9.999 IN 616)
           F118 UEFECT (HAML X(10) IN 616)
     623*
           5118 KFLAG (BAME X IU 616)
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MILE PRE-CONLITIONING (NAME X(10) IN 616)

624\*

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ZZZ1 (STRING (MESSAGE FILE IS OUTPUTEPRINT/MULL SUPPRESSISTUE S
      UPPRESS/ZZZZS))
4004*
       ARIES ISTRING (MESSAGE FILE IS DUMPSCONTRULSORN IS ARIESSMESSAG
       E FILE IS OUTPUTS PRINT/NULL SUPPRESS, STUB SUPPRESS/22281)
4000*
      SUMMARY (STRING (LIST/REPEAT.TITLE D(25) COMP LOT SUMMARY.
                    L(10)TYPE.L(12)LOT NUMBER.L(10)M NUMBER.L(10)DATE
       TEST.L(11)EISPOSITION/C2.C3. C4.C10.C8.OB C2.C3.C4 -H C3 EXIST
       SEPRINT/NAME/COURT LOTS))
       TYPESUM (STRING (LIST/REPEAT.TITLE DI25)COMP LOT SUMBARY.L(10)T
4050*
                    L(12)LOT NUMBER.L(10)M NUMBER.L(10)DATE TEST.L(11)
       UISPOSITION/C2+C3+C4+C10+C8+ OB C3+C4 WH C3 EXISTS AND C2 EC *
       1* $1)
       TALLY (STRING (TALLY/EACH/C1%TALLY/EACH/C2%TALLY/EACH/C4%))
4030*
4040*
      PROP (STRING (*LAD1* *1*% *LAB2* *PROP1* *PROP2* *PROF3* *PRCP4
                    *PROP6* PRINT/NULL SUP. NAME . STUR/ C181 _ SAMES))
4041*
      LAB1 (STRING (LIST/NULL SUP-TITLE 0(30) COMPONENT TESI SUMMARY+L
       (12)+LOT NUMBER, L(7)+CALIBER, L(10)+TYPE, L(10)+M NUMBER, L(8)+GUA
       NTITY.L(10)MANU-+FACTURER.L(10)INITIAL+DISP.L(10)FINAL+DISP.L(1
       01PROVING+GROUND/C3.C1.C2.C4.C5.C6.C7.C6.C9
                                                      WH LOT EQ11
      PROP1 (STRING (PRINT/GROUP/ C100 WH SAMES))
4043*
4044*
       PROP2 (STRING (LIST/REPEAT SUP-TITLE G(30)PROPELLANT ACCEPTANCE
       TEST SUPMARY, L(12)+LOT NUMBER. L(10)TEST+PHASE. L(4)+TEMP.L(5)N+
       FIRED.L(4)A+CGNS.L(7)CHARGE+UT.L(12)+MALFUNCTIONS.L()2)CALIBRAT
       IGH+LOT, L(12) SECONDARY+LOT/ *PROP2A*))
       FROP2A (STRING (C3,C131,C132,C133,C134,C135,C136,C145,C146 WF S
       AnE%))
4046*
       PROPA ISTRING (LIST/TITLE B(15).L(10)TEST+PHASE.L: 7.CHS VEL+
      PLAN.
                   L( 8)CURR VEL+ MEAN, L(5) VEL+STD, L(8)CBS FRES+FEAN
       +L(8)+PHES STL+L(10) VEL+CORRECTION+L(11) PHES+CORRECTION+L(10) WT
       +LORRECT1UN/C131.C140.C141.C142.C143.C144.C147.C148.C149 WH SAX
      PROP4 (STRING (LIST/REPEAT SUP, TITLE D(20)PROPELLANT RECOMMENDE
       L CHARGE DATA L (12)+LOI NUMBER L (13)+CONFIGURATION +L (16)+ZONE +L
       ( 8)REC CHG+WT INCR+L( 8)REC CHG+WT TOTAL+L( 8)REC+VEL,L( 8)FEC
       +PRESSURE/C3.C151.C152.C153.C154.C155.C156 WH SAW1)
4046*
      PROPS (STRING (LIST/REPEAT SUP-TITLE D(20)PROPELLANT CIMENSICN
       C3.C161.C162 WH SAME%))
4049*
       PROPE ISTRING (LIST/REPEAT SUP-TITLE DISOJPROPELLANT SUPPORT FO
       UIPMENT DATA-L(12)+LOT NUMBER-L(10)EQUIPMENT+NAME-L(10)EGUIPPEN
       1+MODEL.L(10)EQUIPMENT+LOTZ
                                     C3.C171.C172.C173 UH S.FFE11
4061*
      FUZE1 (STRING (PRINT/GROUP/ C200 WH SAMES))
       FUZES (STRING (LIST/REPLAT SUP.TITLE DESDIFUZE ACCEPTANCE TEST
       SUMMARY.L(12)+LOT NUMBER.L(20)+TEST PHASE.L(10)+WEAPON.L(5)N+FI
       KED+L(4)N+CONS+L(10)PRUP+CHG+_L(6)FUZF+SE[+L(7)N+REVERSE+L(4)N+
       GUDS/C3,C221,C222,C223,C224,C225,C226,C227,C228 WH SAFEX))
      FUZES (STRING (LIST/TILE #(15) +1 (20) +TEST PHASE +1 (20) CEASUREME
4063*
           NAKE-L(10)+ MEAN-E(10)+ STG-L(10)+MAXIMUM-L(10)+MINIMUM/
       C221.C241.C242.C243.C244.C245 WH SAME:11
4064*
      FUZEY (STRING (LIST/REPEAT SUFITITE D(30) FUZE DATA LARD AND CO
       MPONENT SAILURE SUMMARY L (12)+LOT NUMBER L (20) COMPCN: N1+NAME . L
       12)COMPGHENT+LOT.L(10)COMPONENT+QUANTITY.L(10)COMPCHENT+DATE MA
       RU-L(10)COPPONEMI+TEST NAME-L(4)N+CONS-L(4)N+FAIL/ *FLZE4A*)]
4070*
       IGNCART (STRING (*LABI* *1* % *LAB2* *IGN1* *IGN2* FRINT C481 W
4071*
       16N1 (STRING (PRINT/NAME.GROUP.STUB.NULL SUP/ C400 bb SAMES))
       16N2 (STRING (LIST/REPLAT SUP.TITLE D(36)IGNITION CARTRIDGE TES
       1 SUMMARY+L(12)+LOT NUMBER+L(20)+TEST PHASE+L(5)R+FIREL+L(4)A+C
       OHS.L(12)+MALFUNCTIONS.L(10)UNCORR VEL+ MEAN.L(8)CONR VEL+ FEA
       N.L:7)+VEL STU/C3,C421.C422,C423,C424,C425,C426,C427 wh SA%))
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HELP (STRING (PRINT/HULL SUP.INDENT.REPEAT SUP.STUB SUP.TREF/C1
       010.C1030.C1050.UB C1051.C1051 WHERE (1010 EQ HELPERHAT/STUE.R
       EPEAT/$1)
       HELPI (STRING (PRINT/NULL SUP, INDENT, REPEAT SUP, STL, SUP, TREE/
       C1010.C1030.C1050.OB C3031.C1051 WHERE C1010 EQ #149 FRINT/STUB
       ·KEPEAT/%))
       HELP2 (STRING (PRINT/NULL SUP.INCENT.REPEAT SUP.STLB SUP.GROLP/
1080*
       C1010.
                    £1030 • C1050 • OB C1051 WHERE C1010 EQ *1* AND C1030
       LW *2*$PKINT/STUB.REPEAT.TREE/$))
1090*
       HELPCOMMANC (STRING (LIST/NULL SUP. TITLE D(5) ARIES CUPPAND SLAM
       AKY.L(12)+COMMANU NAME.B(20)/ C1010 WHERE C1 E0 HELP&))
2050*
       CUMPO (STRING (LATA FILE IS TEMPS REPORT FILE IS SENING PRINT/N
       ULL.REPEAT SUP.BLUCK.STUB SUPPRESS.GROUP/% QUEUL& REFEAT/PRIAT
       C5.C222.C224.C322.C324 WHERE C2 EQ *DATA* AND C3 EG *CATA**/% T
       EKMINATES))
       AG (STRING (REPORT FILE IS TEMPS UNLUAL/REPEAT, NULL/LSu1, C902, 0
2066*
       B C901 WHERE SAME AND C901 EW PROJECTILE OR C901 EW FLZE OR C90
       1 EW PRIMER OR CHOI EQ TRACER))
40°5#
       GISPLAY 'STRING (PRINT/MAME, STUB, GROUP, WULL SUPPRESS, REPEAT SUP
       PRESS/BY ENTRY. C2. C3. C4. C5. C6. C6. C9. C10. C11. C12. C13. L1 uu. C16c. C
       130,0200,0226,0240,0900,0910,030,0320,0330,0400,0426,0500,0520,
       C530 WH C3 E6 *1*%*2221*%))
       FUZE4A (STRILE (C3.C901.C911.C912.C913.C921.C922.C923 aH SAMEE)
4065*
4042*
       LAB2 (STRING (PRINT/NAME.STUB.INDERT.MULL SUP/CIO.C11.C12.C12.
             C14,C15,C10,C17,C16,C19 WH SAME 2))
4060*
       FUZE (STF166 (*LAB1* *1*%*LAB2* *FUZE1* *FUZE2* *FUZE3* *FUZE4*
             PRINT/NULL SUP-NAME, STUB-INGENT/ C951 WH SAMESI)
2001*
       FILE1 (STRING (PRINT/BLOCK.STUB SUPPRESS/% REPORT FILE IS FILE1
                   LESCHIBE +1+% PRINT/HULL/ +1++08 C3 WHERL +2+%))
2002*
       FILE2 (STRING (PHINT/BLUCK+STUB SUPPRESS/% REPORT FILE IS FILE2
                   UESCRIBE +1*2 PRINT/RULL/ *1** UB C3 WHER: *2*%))
       FILES (STRING (PRINT/BLOCK+STUB SUPPRESS/# REPORT FILE IS FILE3
2003*
                   DESCRIBE +1+6 PRINT/HULL/ +1++0B C3 WHERE +2+%))
2004*
       FILE4 (STRING (PRINT/BLUCK+STUB SUPPRESS/% REPORT FILE IS FILE4
                   CESCRIBE *1*% PRINT/NULL/ *1**OB C3 WPERF *2*%))
2005*
       FILLS (STRING (PRINT/BLOCK-STUB SUPPRESS/% REPORT FILE IS FILES
                   UESCHIBE *1*% PRINT/MULL/ *1*+06 C3 WHERE *2*%))
2006*
       FILLE (STRING (PRINT/BLOCK.STUB SUPPRESS/& REPORT FILE IS FILEE
                   DESCRIBE $1*% PRINT/NULL/ *1*+08 C3 WHERE *2*%))
2007*
       FILE? (STAINE (PHILT/BLOCK+STUB SUPPRESS/# REPORT FILE IS FILE?
                   DESCRIBE +1+% PRINT/GULL/ +1++0B C3 WHERE +2+$))
       FILLS (STRING (PRINT/OLOCKISTUB SUPPRESS/# REPORT FILE IS FILES
*300S
                   UESCRIBE +1+5 PRINT/NULL/ +1++0B C3 WHERE +2+%))
2009*
       FILES (STRIKG (FRIKI/BLOCK-STUB SUPPRESS/S REPORT FILE IS FILES
                   DESCRIBE *1*5 PRINT/HULL/ *1*+0B C3 PHERE +2*5)1
2010*
              (STRING (FRINT/BLOCK, STUB SUPFRESS/% REPORT FILE IS FILE
       10%
                    UESCRIBE *1*% PRINT/NULL/ *1*+08 C3 WHERE *2*5);
2011*
       FILE 11 (STRING (FRINT/BLOCK, STUB SUPPRESSY: REPORT FILE IS FILE
                    GESCRIBE *1*5 PRINT/NULL/ +1*+08 C3 WFERE +2*5))
2012*
       F11412
              (STRING (FRINT/BLUCK, STUB SUPPRESS/$ PEPORT FILE IS FILE
       12%
                    LESCRIBE *1*% PRINT/NULL/ *1**OR C3 WHERE *2*%))
```

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FILE 13 (STHIRG (PRINT/bLOCK, STUE SUPPLESS/\* REPORT FILE IS FILE DESCRIBE \*1\*g PRINT/NULL/ +1\*+08 C3 WHERE \*2\*5)) FILE: 4 ISTRIBE (PRINT/BLOCK, STUB SUPPRESS/A REPORT FILE 13 FILE LEGERIAL \$142 PHININGELY \$14.08 C3 WHERE \$242)) 145 20154 FILLIS ISTRING (PRINT/DLUCK, STUB SUPPRESS/E REPORT FILL IS EILE DESCRIBE \*1\*E PRINT/NULL/ \*1\*+00 C3 WHERE \*2\*%)) 15% FILE 16 (STRILE (PRIMI/BLUCK, STUB SUPPRESS/% REPORT FILE 15 FILE DESCRIBE +1+5 PRINT/NULL/ +1++OP C3 WHERE +2+5) 2017\* FILE 17 (STRIPE (PRINT/BLOCK STUB SUPPRESS/E REPORT FILL IS FILE 10% UESCRIBE \*1+% PRINT/NULL/ \*1\*+06 C3 WHERE \*2+%)) 2018\* FILLIE (STRING (FRINT/BLUCK-STUB SUPPRESS/# REPORT FILE IS FILE 17% DESCRIBE \*1\*% PRINT/hULL/ +1\*.UR C3 HFERE +2\*%)) 16% FILLIS (STRING (FRINT/BLUCK STUB SUPPRESS/\$ REPORT FILE IS FILE UESCRISE \*1\*% PRINT/NULL/ \*1\*,09 C3 WHERE \*2\*%) FILEZO (STRING (PRINT/BLOCK, STUB SUPPRESS/% REPORT FILE IS FILE 2626\* UESCRIBE \*1+% PRINT/HULL/ +1++08 C3 WHERE +2+%))

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SYSTEM KELLASE NUMBER
DATA BASE HAME IS LAW
DEFINITION NUMBER
DATA BASE CYCLE
                     215
      CALLE & (NAME X(10) WITH SOME FUTURE AUDITIONS)
       TYPE (NAME X(10) WITH SUMP FUTURE ADDITIONS)
   3*
       LUT (NAME X(12))
   4
       P NUMBER (NAME X(10) WITH SOME FUTURE AUDITIONS)
   5*
       BUANTITY INON-KEY INTEGER NUMBER 9(6))
   6*
       FANUFACTURER (WAME X(10) WITH SOPE FUTURE AUDITIONS)
   7*
       INITIAL LISP (MARE X(10) WITH SOME FUTURE ADDITIONS)
   8*
       FINAL DISP (NAME X(10) WITH SOME FUTURE ADDITIONS)
   9*
       FIRING RECORD LUMBER (NON-KEY WARE X(10))
  10*
       TEST DATE (GATE)
       ASSEMBLY DATE (DATE)
  11*
  12*
       TEST SERIES (MON-KET NAME X(10))
  13*
       TUTAL SAPPLES (ILLIG-KLY INTEGER NUMBER 9(5))
  14*
       11EM NOMENCLATURE (NOR-KEY TEXT X(80))
  15*
       CAUSE OF REJECTION (NON-KEY HAME X(10))
  16*
       LUT COMPENTS (NON-KEY TEXT X(80))
  18*
       SPECIFICATION (NAME_X(13))
  19*
       PRAWING (NAME X(10))
 100*
       HALLISTIC TEST INFO (RG)
   110*
         PHASE (NAME X(10) IN 100)
   111*
         FLAG (INTEGER MUNDER 9 IN 100)
   112*
         AMBIENT TEMP (INTEGER NUMBER 9999 IN 100)
   115*
         NUMBER FIREL (INTEGER NUMBER 999 IN 100)
   114*
         DATE FIRED (DATE IN 100)
   115*
         APPROX TIPE FIRED INUN-KEY INTEGER NURBER 9999 IN LOUI
         OF (NCH-KEY DECIMAL NUMBER 8(9).995 IN 100)
   116*
   11/*
         TARGET DISTANCE (NOW-KEY INTEGER NUMBER 9(5) IN 1001
   118*
         TEST REPARKS (how-key text x(80) IN 100)
   121*
         <u>VEL N (KCN-KEY INTEGEK NUMBER 999 TK 100)</u>
   122*
         VEL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
   125*
         VEL STL (ULLIMAL NUMBER 9(6).999 IN 100)
   124*
         VEL MAX (DECIMAL MUMBER 9(6).999 IN 100)
   125*
         VEL MIR (DELIMAL NUMBER 9(6).999 11, 100)
         HI HORZ INPACT COOKU (INTLIGER NUMBER 999 IN 100)
   150*
         MEAN HURZ IMPACT COOKD (DECIMAL NUMBER 91 1.999 IN 100)
   151*
         STU HORZ IMPACT COURD (DECIMAL NUMBER 9(6, 999 IN 100)
   132*
   155*
         N VERT IMPACT COOKL CINTEGER NUMBER 999 IN 901
         MEAR VERT IFPACT COOKU (DECIMAL NUMBER 9(6).999 IN 100)
   154*
   135*
         <u>SID VERT IMPACT CUURD (DECIMAL NUMBER 5(6).999 IR 100)</u>
   136*
         MAX HGHZ DISPLACEMENT (NON-KEY DECIMAL HUMBER 9(6).999 IN 100
   157*
         MAX VEHT DISPLACEMENT (NON-KEY DECIMAL NUMBER 9(6).559 IN 100
   140*
         DEFECT SUMMARY (RG 11: 100)
     141*
           BEFELT HATE (HAME X (10) IN 140)
           NO OF CCC (INTEGER NUMBER 99 IN 140)
          DEFECT HOTE INDI-KEY WAME XITO) IN 140)
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150* K BY R INFU-LAW (RG IN 100)
          ROUND RUMBER (NON-KLY INTEGER RUMBER 9999 IN 150)
    151*
          HANGEIRE TIME (NUN-KEY DECIMAL NUMBER 9(6).999 IN 150)
    152*
    153*
          VEL INCH-NEY BECIAND NURSER 9(6).999 IN 150).
          HO COURD (NOS-KEY DECIMAL NUMBER 9(6).999 IN 150)
    154*
    155*
          VERT COURT INON-KEY DECIMAL HUMBER 9(6).999 IN 1501
    156*
          IMPACT FUNCTION (NAME X(10) IN 150)
          WIND VELOCITY (NUN-NEY INTEGER HUPBER 9999 IN 156)
    157*
          WIRL DIKELTION (NON-KEY INTEGER NUMBER 9999 IN 150)
    156*
          PENEIKATION (MARE X(5) IN 150)
          EXIT HOLE AREA (NON-KEY DECIMAL HUMBER 9(6).999 IN 150)
         HATER CONTENT (NON-KEY INTEGER NUMBER 9999 IN 1501.
    161*
    162* GEFEC! (MAHE X(10) IN 150)
    165*
         RELAG (INTEGER NUMBER 9 II: 150)
900* UATA CARL IRFG (RG)
  901* CUMPONENT NEME (MAME X(10) II, 900)
  902* COMPONENT IN NUMBER (NAME X(10) 1% 900)
  910* COMPONENT LOT INFO (NG IN 900)
    911* COMPUNENT LUT (NAME X(12) IN 910)
    912*
          COMPONENT GUANTITY (LOCK-NLY INTEGER HUMBER 9(6) IN 910)
    913+ COMPLNENT DATE (DATE IN 916)
920* CUMMENT INFO (RG)
        CUMMENTS (HUN-KEY TEXT X(80) IN 920)
4001* AIUS (RG)
        2222 (NOR-KEY TEXT X(20) IN 4001)
 4002*
      STATIC TEST THEO-PEN (RG)
        H-SP (RUN-KLY INTEGER NUMBER 9(7) IN 200)
  202* MLAN-SE (CECIPAL NUMBER 99.99 IN 206)
  203*
        STE-SP (BECIMAL NUMBER 99.99 It 200)
  204* Min-St (DECIMAL NUMBER 99.99 11: 200)
        MAX-SP (UECIMAL NUMBER 99.99 In 200)
  2U6*
        KU-SP (CECIFAL NUMBER 59.99 IN 200)
  207*
        K24-SP (CECIMAL NUMBER 99.99 IN 200)
  210# K HY R INFU-STATIC PEN (NG IN 200)
    211# PEN-SP (NON-KEY DECIMAL NUMBER 99.99 IN 210)
    212* HFLAG-SF (HAME X IN 210)
      2421 ISTRING (MESSAGE FILE IS OUTPUTSPRINT/NULL SUPPRESSISTUE S
      UFPRESS/222211
4004*
      ARILS (STRING (MESSAGE FILE IS DUMPECONTRULEDEN IS ANIESEMESSAG
      E_FILE_15_QUIPUTS_PRINT/NULL_SUPPRESS.STUB_SUPPRESS/222231)
      DISPLAY (STRING (PRINT/NAME.STUB.GROUP.HULL SUPPRESS.REPEAT SUP
      3 LG *1*2*2221*5))
      CUMPLUT ISTATIO IPATETANAME STUB GROUP ON LL SUPPRESS REPEAT SUP
      PHESS/BY ENTHY, C1, C2, C5, C4, C5, C6, C7, C9, C10, C12, C13, C14, C15, C170
      +6172 Wk 63 t6 +1+3+2221+51)
4007*
      CHLUTS (STRING (PRINT/NATE STUR GROUP NULL SUPPRESS NEFEAT SLPP
      #ESS/87 ERTKY.C2.C3.C5.C7.C10 wH C173 EG #1+2+Z2Z1+x11
      COLARCH (OTKING (LIST/KLPEAT SUP, TITLE U(20)+1+, CR+LuT NUMBER, B
      L(10),COPPORENT+GUART/C3,C5,C7,C18,C173,GB C3,C10 NE C173 EQ *1
      ****/(/1*%))
```

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4005*
      SUMMARY (STRING (PRINT/NARE.STUB.GROUP.HULL SUPPRESS.REPEAT SUP
      SMESS:3Y EMPHY.C1.C2.C3.C4.C5.C6.C7.C9.C10.C12.C13.C14.G15.C100
       .C130 ah C3 Eu *1***2ZZ1*%))
3000*
      *72LIST (STRING (LIST/REPEAT SUP, TITLE ((20) *1* • F(60) • + H1* * H2*
      /C3,C10,C7,C6,C110,C141,C142,L121,C122,C123,C130,C151,L132,C133
       +C134+C135+OE C3+C110 WH C4 E6 M72*M72XX AND +1*%)1
3003*
      F73LISI (STRING (LIST/REFEAT SUP.TITLE U(20)+1++F(60)++1++H2+
       /C3,C10,C7,C6,C110,C141,C142,C121,C122,C123,C130,C131,C132,C133
       +C134+C135+GB C3+C110 WH C4 E6 M73*K73AX AND *1*%))
5001*
      F1 (STRING (L(11)LOT.B(1),L(10)TEST+CATE.B(1).L(3)IN1+LSP.B(1).
      L(8)FIMAL+GISP+b(1)+L(10)TEST+PHASE+L(1)+L(10)DEFFCT+I*PF+B(1)+
      L(2)#U+GF .B(2).))
5002*
      HZ (STRING (
                      K(2)+-N.B(1).K(9)VEL+rEAN.B(1).R(9)+574-18(2).R
       (2)+-K.B(1). K(9)HUK+KLAK.B(1).R(9)+SIL-.d(2).R(2)+-K.E(1).R(9)
      VERT+MEAR+8(1)+K(9)+STU-))
      FIBLIST (STRIKE (LIST/NEPEAT SUP-TITLE B(20)+1*+F(ED)
3005*
      LUT.L(4)LISP. R(3)N.R(5)MEAN.R(5)STU.R(5)MIN.R(5)MAX.R(5)K-8.R(
      51K-24/C3.C7.(201.C202.C203. C204.C205.C206.C207.G. :3 WH C4
      te 518 AND *1*%))
3010*
      F72LOT (STRING (LIST/REPEAT SUP-TITLE D(20)+1+.L(12).C1.L(8)GUA
      MILLY.L(4)INIT+UISP.B(3).L(10)FINAL DISP.L(10)ASSEMBLY+DATE.L(1
       0)TEST DATE, L(10)TEST+SERIES, L(20)CAUSE OF REJECTION, L(20)CCMM
       LNTS/L3,C5.C7,C6.C11.C10.C12.C15.C16 WH C4 EG M72*F72A2 AND C3
       LU *1*#*GPAP*))
3011*
      GPAP (STRING (*GPAPA**GPAPB**GPAPC**GPAPU*))
      GPAPA (STRIGO (LIST/FEPEAT SUP-TITLE L(10)+PHASE-R(7)+SAMPLES-R
3012*
       (3)+VEL+h. 8(1).k(9)+VLL+ hEAR.B(1).R(9)+VEL +STD.R(3)+HOR+ N.B
       (1) +H(9)+HCR +HEAM+B(1)+H(9)+HGR+ STL+E(2)+R(9)+HGR +FAX (IISE+R
       (4)+VERT+ N.E(1)+R(9)+VERT+ MEAN.B(1),R(9)+VERT +SID.+6PAPA1+1)
3016*
      GRAPAI (STRILL (E(2).R(5)+VERT+ MAX DISP/
                           C110.C113.C121.C122.C123.C13r.C131.C132.C1
       36.C133.C134.C135.C137.Ub C110 wh SA%))
3013*
      EPAPH (STRING (LIST/REPEAT SUP-TITLE L(18)+PHASE-L(1...)+DEFECT-F
       (5)+RO +GCC+L(10)+CCMMENTS/C110+C141+C142+C143+OB C110+C141 bH
       SAXII
      GPAPE (STRING ( LIST/REFEAT SUP-TITLE L(13)+LOT-L(10)+COMPONENT
3014*
       +L(20)+CCMFGKENT+ LOT, K(9)+QUANTITY+L(10)+DATE OF +MANLFACTURE/
       C3.C171.C173.C174.C175.08 C171.C173 WH SAX))
3015*
      CHAPO (STRING ( LIST/REFEAT SUP-TITLE L(20)ROUND BY AGEND-F(EO)
        +L(13)LGT+L(10)FHASE+K(5)ROUND+K(10)HANGFIRE+TIME+K(10)VELOCIT
       HETHATICA. L(10)LEFELT/*GPAPU1*))
      GEAFDI (STRIKG (
       1,C152,C153,C154,C155,C156,C159,C162,GE C110 WH SAX))
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Section of the state of the section of the section

FILE1 (STRIMG (FRIMT/BLOCK, STUB SUPPRESS/% REPORT FILE 15 FILE1 DESCRIBE \*1\*% PRINT/NULL/ \*1\*+0% C3 WHERE +2\*%)) 2002\* FILLS (STRING (PRINT/BLOCK, STUB SUPPRESS/S REPORT FILE IS FILE? ULSCRIBL \*1\*% PRINT/NULL/ \*1\*\*08 C3 PHERE \*2\*%)) FILL3 (STRILG (PRIMI/BLOCK, STUB SUPPRESS/# REPORT FILE IS FILE3 OF SCHIEF #1+7 PHINT/POLLY #1++OR C3 MHEHF #5+2) ISTRING IPRINT/BLOCK.STUB SUPPRESS/ REPORT FILE IS FIL UESCHIBE #1#% PRINT/HULL/ >1#+08 C3 WHERE #2#%}} FILES\_(SINING (PNINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILES LESCHIBE #1#% PRINT/LULL/ #1#+08 C3 WHERE #2#\$)) FILES (STRING (PRINT/BLUCK, STUB SUPPRESS/# REPORT FILE IS FILES LLSCKIBE \*1\*1 PRINT/RULL/ \*1\*\*OB C3 WHERE +2\*5)} (STHING (PEINT/BLOCK, STUB SUPPRESS/2 REPORT FILE IS FILE LESCRIBE \*1\*% PRINT/NULL/ \*1\*\*0B C3 WHERE \*2\*%)) FILLS (SINING (PRINI/BLOCK-STUB SUPPRESS/\* REPORT FILE IS FILES LESCHIEL +1+% PRINT/HULL/ +1++08 C3 WHERE +2+%)) FILE9 (SINING (PHINI/DEGCK-STOD SUPPRESS/X REPORT FILE IS FILE9 ULSCRIBE #1+% PRINT/NULL/ #1++08 C3 WHERE #2+%)} FILE 10 (SIKING (PKINI/BLOCK, SIUB SUPPRESS/2 REPORT FILE IS FILE 16% LESCRIBE \*1\*% PRINT/NULL/ \*1\*\*OR C3 kFERE \*2\*%)) 2011\* FILE 11 (SIRING (PRINT/BLOCK.SIUB SUPPRESS/X REPORT FILE IS FILE DESCRIBE \*1\*5 PRINT/hULL/ +1\*+0B C3 WFERE \*2\*511 115 FILE12 (\$18166 (1981)NIVBLOCK, \$10H SUPPRES\$/\* REPORT ELL: IS FILE 20:2\* 12% LESCRIBE \*1\*2 PRINT/RULL/ \*1\*+OR C3 WHERE \*2\*5)) 2U13\* FILE 13 (STRING (FRINT/BLCCK, STUB SUPPRESS/# REPORT FILE 15 FILE 13% LESCHIUL \*1\*% PHINT/NULL/ \*1\*, OR C3 WHERE #2\*%)) "ILE14 (SIMING (PRIMI) BLOCK, SIUD SUPPRESS/S REPORT FILE IS FILE 2014\* LESCHIBE \*1+2 PHIBT/RULL/ +1++OR C5 WHENE +2+%)) 14% FILE15 15% LESCHIBE \*1\*% PHINT/HULL/ +1\*+OB C3 WHERE +2\*%)) 2016\* (STRIBE (FRIRT/BLOCK, STUE SUPPRISS/S REPORT FILE IS FILE 162 DESCRIBE \*1+% PRIMI/AULL/ +1++0B C3 WFERE +2+%)} 2017\* FILE 17 (SIRING (PRINT/BLOCK, STUB SUPPRESS/# REPORT FILE IS FILE 17% LESCRIBL \*1+% PRINT/RULL/ +1++UB C3 WFERE +2+%)) \_2016\*\_ FILLIO\_(\$!KING (PRIGT/BLUCK.SIUB SOPPRESS/% REPORT FILE IS FILE LESCHIUL \*1+2 PRINT/RULL/ +1++UR C3 kFERE +2+5)) 10% 2019\* FILE 19 (STRIKE (PRINT/BLOCK+STUB SUPPRESS/# REPORT FILE IS FILE LESCRIBE +1+% PRINT/NULL/ +1++GB C3 WFERE +2+%)) 15% 2026\* FALLZO ISTRILO IPRINI/PLUCK.STUB SUPFRESS/% REPORT FALE AS FILE. 20% LESCHIBE \*1\*5 PHINI/MULL/ 41\*+05 C3 WHERE 42\*5))

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SYSTEM RELEASE GUMBER 2.30S	$\mathbb{C}$
DATA BASE NAME IS WEAPON	
DEFINITION GURGER 3	
DATA BASE LYCLE 1	
1* CALIBER INABE X(10) WITH SOME FUTURE AUDITIONS)	
2* PUDLL NUMBER (NAME X(1U) KITH SUME FUTURE ACDITIONS)	
3* TUBL NUMBER (MARE X(10) WITH SOME FUTURE AUDITIONS)	
4* GUI NUMBER (NAME K(10))	-
5* KOUNGS FIRED (INTEGEN NUMBER 4(6))	
6* PANUFACTURER (MARL X(10) WITH SOME FUTURE ADDITIONS)	
7* FAIL OUR STATE WITH SURE FUTURE ADDITIONS)	
7* tell bort Slant (HON-KEY DECIMAL NUMBER 9(6),999) 8* FAIN BORE FIRISH (NON-KEY DECIMAL NUMBER 9(6),999)	
34 STAN CORE FIRES (MONTHE DELINE NUMBER 9(6).999)	
10* FACULES GROUND (NAME X(10))	
11* IEST WATE CENTED	
100+ KIFLEU WEAPON INFO (RG)	
1014 CHANBER START INON-KEY DECITAL RUNDER 9(6).999 IN 1001.	
1024 CHARBER FIGISH (BUIL-KEY DECIMAL BUNGER 9(6),999 In 100)	
103 OLPTH OF BREECH RECESS (NON-KEY DECIPAL NUMBER 9161.599 IN 10	
104+ NUMLER OF LEALS GROUPES (INTEGER NUMLER 999 IN 100)	
105* LENGTH OF TIJE (DECIMAL KUMBER 9(6),949 IN 100)	
1064 BASIC LANGS GIAMETER (MON-KEY DECIPAL NUMBER 9(6). 45- IN 100)	
10/* BASIC CROCVES PIAMETER (NON-MEY DECIMAL NUMBER 9(6:.599 IN 10	- (1
120* TUBE BEASUREMENT INFO CHE IN 100)	(2)
121+ DISTANCE FROM BLAR FACE OF BREECH (NON-KEY DECIMAL NUMBER 9	
(6),595 11 120)	
122* DISTANCE FROM MUZZLE FACE (NON-MEY DECIMAL NUMBER 9(6).959	
IN 150)	
1200 DISTANCE FROM REAK FACE OF TUBE (LON-MEY DECIFAL NEMBER 516	-
1,995 16, 120)	
124* VERTICAL LANGS DIAMETER (HUN-KEY ELCIMAL NUMBER 5(0).999 IN	
120)	
125* HURIZ LALLS CHARETER (HON-KEY DECTHAL HUMBER 9161.599 IN 12	
150+ AFKITCUT OMORAES PTWELEN (MOV-KEA RECIPAT NOWEEN 2(9).823	
IN 120)	
127* HURIZ GROUVES DIAMETER (HER-KEY DECIMAL PUMBER 9(6).999 IN	
140* FULLOVER MEASUREMENT INFO ING TO 1001	
141 PU CISTAILE FROM REAF FACE OF BREECH (NON-KEY CELIFAL NUMBE	-
R 9(61.999 1f. 140)	
142+ PL DISTANCE FROM REAR FACE OF TULL (NUN-KEY DECTRAL NUMBER	
9(6).995 [[i 140]	
143* PC VEHTICAL LANDS DIAMETER (NON-NET DECIMAL HUPDER 9(6),599	
18 140)	
144* PU HUR12 LANUS UINHETER (MON-KEY DECIMAL NUMBER 7(6).999 IN	
145* PU VEHTILIL GROUVES DIAMETER (BUIL-NEY DECIMAL NUTTER 9(6).9	
99 1R 140)	(J
1464 PU HCRIZ GROUVES DIAMETER THUL-KEY DECIMAL MINBER 3161.959	
16 140)	

160* CHAMBER PEASUREMENT INFO (RG IN 100)
161* CH DISTANCE FROM REAR FACE OF BREECH (NON-KEY CECIMAL NUMBE
R 9(6).999 IN 160)  162* CH DISTANCE FROM MUZZLE FACE (MON-KEY DECIMAL NUMBER 9(6).9
99 IN 160) 163* CH DISTANCE FROM MEAN FACE OF TUBE (NUN-KEY DECIPAL NUMBER 9(6).999 IN 160)
164* CHAMBER BASIC DIAMETER (NUN-KEY DECIMAL NUMBER 9161.999 IN
160) 165* CHANDEK ZERU (NUN-KEY DECIMAL NUMBEK 9(6).999 IN 160) 166* CH VENTICAL GAUGE (NON-KEY DECIMAL NUMBEP 9(6).999 IN 160)
167* CH HOHIZ GAUGE (NON-KEY DECIKAL MURBER 9(6).995 IN 160)
200* SHOOTH BORE WEAPON INFO (RG)  201* BASIC SMOOTH BURE DIAMETER (NON-KEY DECIMAL NUMBER 9(6).995 I
N 200) 220* Shouth Bohe Muzzle Info (RG IN 200)
221* SB DISTANCE FROM MUZZLE FACE (NON-KLY DECIMAL NUMBER 9(6).9 99 IN 220)
222* SE VERTICAL GIAMETER (HON-KEY DECIMAL NUMBER 9(6).399 IN 22
223* SD HCKIZ CLAMETER (NON-KEY DECIMAL HUMBER 9(6),995 IN 22C) 300* CUMMENT 1AFC (NG)
301* CUMMENTS (NON-MEY TEXT X(AQ) IN 300) 1000* HELP INFO (NG)
1010* CURMAN NAME (NAME X(10) IN 1000) 1020* CUFMAND INFO (RG IN 1000)
1030* SUBCOMPAND MANE (NAME X(10) 1N 1020)  1031* SUBCOMPAND SEWUENCE (NON-NEY INTEGER NUMBER 99 1N 1020)
1040* SUBCCMFAMU 1040 (NO 10 1020)  1050* SUBCOMBAND TEXT (NON-KEY TEXT X(72) IN 1040)
1051* SECUENCE NUMBER (NUM-REY INTEGEN NUMBER 999 IN 1040) 4000* SUMMARY (SINING (LIST/REPEAT SUP)TITLE U(20) NEAPON DATA EASE SU
MARY-L(7)+CALIBEN-L(10)+ODEL+NUMBER-L(10)TUPE+NUMBER-L(10)GLN+
RUMBER*L(10)ROUNDS+F1RED/C1. C2.C3.C4.C5.OB C1.C2.C3.C4.C5 WH C1 EXISTS*))
4010* HIFLED (STRING (PRINT/NULL SUP/%***EAPGN)* *1* AND C4 E6 *2** *R  1+LED1* *TUBL* *PULLOVEK* *CHAMBER* PRINT/NAME.AGLL SUF.*S
TUB/C301 WH SAMES)) 4001* LEAPON1 (STRING (LIST/TITLE D(30)STANGAGE INSPECTIC); SUMMARY, L(
7)+CALIBEK.L(10)MODEL+NUMBER.L(10)TUBE+NUMBER.L(10)GUA+NUMBER.L (6)KOUNUS+FIRED.L(10) MANU-+FACTURER.L(10)MAIN BORE+START.L(10)
FAIR EURE+FIRISH+L(10)STAR GAGE+RUMBER+L(10)PROVING+GRUND/#6EA
4UD2* WEAPONIA (STRING (C1.C2.C3.C4.C5.C6.C7.C8.C9.C10 WH L3 E0)) 4U11* FIFLEUI (STRING (PRINT/NAME, WULL SUP. INGERT. STUB. GROUP/C100 WH
SAMES)) 4012* TUBE (STRING (LIST/MEPLAT SUP.TITLE U(30) TUBE MEASURE FENT DATA.
L(10)TUBE+hunhER+L(10)HhuS+FINED+L(11)DIST REAR+FACL CHEECH+E(2
).L(10)DIST FROM+MUZ FACE.L(10)DIST REAK+FACE TURE.L(14)VERTICA L+LANDS DIAM.L(10)HOKIZ+LANDS DIAM.L(11)VERTICAL+GROUVE DIAM.*T
4613* TUBEA (STRING (B(2)+L(11)HORIZ+GROOVE DIAM/C3+C5+C121+L122+C123
+C124-C125- C126-C127 MH SAMEX))  4014* PULLOVER (STRING (LIST/REPEAT SUP-TITLE D(30)PULLOVER PEASUREME
h) DATA-L(10)TUBE+HUMBER-L(10)RMDS+FIREU-L(16)PO DISIANCE+REAR FACE BREECH-L(14)PO DISTANCE+REAR FACE TUBE-L(10)PC VEHT+LANCS
Ulan,L(10)PC HORIZ+LANUS DIAM,L(11)PU VERTICAL+GROCYES DIAM,*PU LLOVERA*))
4015* FULLOVERA (SINING (L(11)PO HORIZ+GROUVE DIAM/C3+C5+C141+C142+C1 45+C144+C145+C146 NH SAPEXI)

4016* CI	MAMBER ISTRING ILIST/HEPEAT SUP, TITLE CIBOICHAMBER FEASUREMENT
	UATA-L(10)TUDE+NUMBER-L(10)KKUS+FIXED-L(16)CHAMBER LIST+REAR F LE BKEECH-L(12)CHAMBER DIST+PUZZLE FACE-L(14)CHAMBER LIST+REAR
	FALE TUBE . L (10) CHAMBEN+BASIC DIAM. L (10) CHAMBER+ ZERU CHARBERA
*	1)
4017* C	MAMBERA (STRING (L(10)CHAMBER+VERT GAUGE+L(11)CHAMBER+HORIZ GA
4020* SI	6E/ C3,C5. C161.C162.C163.C164,C165,C166.C167 WH SAMEX))  NOUTH (STRING (PRINT/NULL SUP/X *WEAFGH1* *1* AND C4 EQ *2*) *
	MOOTH: *SHOUTHE* FRINT/MANE, MULL SUP-STUB/ CEU1 WH SAMEN)
)	
4021* 51	MUUTHI (STRING (PRINT/NAME.MULL SUP.INDENT.STUB.G/GUF/C201 &H
	AREST (CARLES OF THE CONTRACT OF THE PARTY O
4022* 51	hooths (String (LIST/REPEAT SUP.TITLE C(20)SMOOTH HURE PUZZLE ATA.L(16)TUBE+HUMBER.L(10;RNUS+FIRED.L(11)OIST FRCM+FUZZLE FAC
Ě	+L(10) VEHTICAL+LIAMETER+L(10) HORIZ+DIAMETER/C3+C5+C221+C222+C2
2:	o wh safer)
	ILE ISTRING (PAINT/BLOCK.STLH SUPPRESS/S REPORT FILE IS FILE)
-	LESCRIEL *1*xPRIRT *1* anthE *2*x))
2002* F	LLL2 (STRING (PRINT/OLUCK, STUB SUPPRESS/R REPORT FILE IS FILE2  b
_ 2003* F	ILLS (STRING (FRIGIVELOCK-STUB SUPPRESS/% REPORT FILE IS FILES
	DESCRIBE *1*SPRINT *1* aFERE *2*5))
2004* F	ILLA STRING (FRINT/BLUCK, STUR SUPPRESS/S REPORT FILE IS FILEA
-	b peschibe *1*sprint *1* where *2*s))
2005* F	LILS 1314ING (ENINT/ULOCKISIUS SUPERESS/S REPORT FILE IS FILES  ULSCRIEL *1*XPRIMI *1* mmERE *2*3))
2006* 1	ILLE ISTRICE IPAINT/HLOCKISTUM SUPPRISSYS REPORT FILE IS FILE
	# DESCRIBE #1##PRIM1 #1# WHERE #2##))
2007* F	ILLY ISTRING IPATION COLOURS SUPPLIES A REPORT FILE IS FILEY
2000	ULSCRIBE *1*%PRINT *1* WHERE *2*5))
F	LESCRIUE *1*2FRIO1 *1* WHERE *2*2)) LESCRIUE *1*2FRIO1 *1* WHERE *2*2))
2005*F	ILLO ISINING IPHINI/BLOCK, SILB SUPPRISS/S REPORT FILE IS FILED
	LESCRIBE +1+2PK191 +1+ hitek( +2+2))
	ILLIU ISTRILU IT HIMIZULUCK STUL SUPERLSSZZ PEPORT FILL IS FILE
	UR UESCHICK *1+2PHINT +1+ WHERE *2+\$))
	ALTI ISTRING IPHINIVELOCK STUB SUPPRESS/A REPORT FILE IS FILE  12 CESCRIBE *1*APRINT *1* WHERE *2*XI)
	ILE12 (\$1816 (PRINT/PLOCK.STUB SUPPRESS/\$ PEPORT FILE IS FILE
	25 LESCRIBE *1+5PRIRT *1* #HERE *2*5))
	ILLIS_ISTRIBE_(PRINT/ELOCK, STUB_SUPPRESSZS_REPORT_FILE_IS_FILE_
	CESCRIBL *1*SPHINT *1* WHERE *2*\$)
	ILE14 (SIMING INTINT/BLUCK+SIUM SUPPHESS/S MEPURI FILE IS FILE 43 CESCRIUE *1*2FRINT *1* WHERE *2*21)
	ILE 15 (STRING (PRINT/BLOCK-STUN SUPPRESS/S PEPORT FILE IS FILE
1:	CESCHICE *1*\$PRINT *1* wHERE *2*\$))
	ILLIE ISTALLE CHILATION CHISTUB SUPERESSIX REPORT FILE IS FILE
	bt uESCRIGE *1*4PRINT *1* WHERE *2*5))
17	ILLIT (STRING (PRINT/BLUCK.STUB SUPPRESS/S REPORT FILE IS FILE 75 DESCRIBE *1*SPRINT *1* WHERE *2*\$))
	ILE 16 (STRING (FRINT/GLUCK, STUB SUPPRESS/S REPORT FILE IS FILE
16	bs UESCHIUE *1*2PRIST *1* WHERE *2*%))
	ILL19 (STATAG (FRIAT/bLOCK, STUB SUPPRESS/# REPORT FALE IS FILE
	US DESCRIBE *1*XPRINT *1* WHERE *2*X11  LLL20 (STRIME (PRINT/BLOCK STUB SUPPRESS/X PEPORT FILE IS FILE
	US LESCRIBE *1*SPRILT *1* knERE *2*\$))
	LLF (STRING (PRINT/HULL SUP, INDERT, REFEAT SUP, STUB SUP, TREE/CI
61	10.C1030.C1050.68 C1031.C1051 WHERE C1010 EG HELPRPHINT/STUE.R
	PLAT/21)
	LLF1 (STRING (PRINT/NULL SUP-INCENT-REPEAT SUP-STLB SUP-TREE/
	1010.C1030.C1050.Ob C1031.C1051 MHERE C1010 EC .102 FMIRT/STUR
	LLF2 (STHIRE (FEINT/HULL SUP. THUENT-REPLAT SUP-STUR SUP-GROLP)
CI	1010. C1030.C1050.3b C1051 WHERE C1010 EQ #1. AND C1020
Lu-	* *2* * ZPF IR I/STUB. HEPEA ( TREE / X )
	LLPCOPPANG (STRING (LIST/NULL SUP.TITLE D(S)ARIES CUPPAND SLAM HY-L(12)+COMPAND MAPE-B120)/ C1010 WHERE C1 E0 HELPE);
14	THE TACT COM AND THE CHOICE / CIVIL BUCKE OF EA HELPS!

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Œ DATA BASE NAME IS TWO75 DEFINITION NUMBER DATA BASE CYCLE CALIBER (NAME X(10) WITH SOME FUTURE ADDITIONS) TIPE (NAME X(10) WITH SOME FUTURE ADDITIONS) LOT (HAKE X(12)) P NUMBER (MANE X(10) WITH SOME FUTURE AUDITIONS) 4. GUARTITY (KUN-KEY INTEGER NUMBER 9(6)) 5₹ MANUFACTURER (MARE X(10) WITH SOME FUTURE ADDITIONS) INITIAL LISP (MARE X(10) WITH SOME FUTURE ADDITIONS) 7\* FIRAL DISP (NAME X(10) WITH SOME FUTURE AUDITIONS) \*5 11\* ASSEMBLY DATE (DATE) TIPL TEST (ILUI-KLY NAME X(10)) 10\* PROVING CROUND (MARIE XCIC) WITH SOME FUTURE ADDITIONS! 9¥ TIEM WOKENCLATURE (NOW-KEY TEXT X(80)) 12\* 13\* FIN-REEL (NON-KEY NAME X(10)) FIRING RECCRU GURBER (NON-KEY NAME X(10)) 14\* CAUSE OF REJECTION (NON-KEY TEXT X(80)) 15\* LINAWING (NATE X(10)) 19\* SPECIFICATION (NAME X(13)) 15\* FALLISTIC TEST 114-0-KABAK (RG) 100\* IUI\* PHASE (MARE X(10) IN 100) DATE FIRED (DATE ID 100) 102\* GE (NOT-FEY DECIMAL RUFBER 5(6).999 IN 100) 1031 TIFM & (AUN-KEY INTEGER NUMBER 999 II. 100) 1064 TIFM REAN (DECIMAL NUMBER 9(6).999 IN 100) 107\* 106\* 11Fm S10 (UECINAL NUMBER 9(6).999 IN 100) 109\* IR POSITION (NON-KEY DECIMAL NUMBER 9(61.999 ID 100) TILK N (NGN-KET INTEGER NUMBER 999 IN 100) 110\* TITE HEAR (DECIMAL NUMBER 9(6).999 IN 100) 111\* TIIR SIU (ULCIPAL HUPBER 9(6).999 IG 100) 112\* IN VELOCITY : (MUN-KEY THIEGER NUMBER 999 IN 100) 113¥ IR VELUCITY HEAR (DECIRAL NUMBER 9(6).999 IN 100) 114\* IR VELOCITY STG (DECIMAL NUMBER 9(6).999 IN 100) 115\* TIPE TO BO 1. (NON-KEY INTEGER NUMBER 999 IN 100) 116\* TIRE TO BU FEAR (DECIMAL NUMBER 9(6).999 IN 100) 117\* TIPE TO BO STO (DECIMAL NUMBER 9(6).999 In 100) 116\* BU RANGE & (HOW-KEY INTEGER NUFBER 999 III 1007 119\* BO RANGE HEAM (DECIMAL NUMBER 9(6).999 IN 100) 120\* 121\* BU RANGE STU (DECIMAL NUMBER 9(6).999 IN 100) BO EL I. (HUN-KEY INTEGER NUMBER 995 III 100) 122\* BU EL FEAR (DECIFAL NUPBER 9(6).999 IR 100) 123\* BU EL STO (DECIMAL NUMBER 9(6).999 IN 100) 124\* BU LAT DEFL II (NON-KEY THTEGER NUMBER 939 IN 100) 125\* HO LAT WEFL MEAN (DECIPAL NUMBER 9(6).999 IN 100) 126\* EG LAY DEFL STO (DECIMAL NUMBER 9(6).999 IN 100) 127\* BO VELOCITY A (MUN-KEY INTEGER NUMBER 999 IN 109) 128\* BU VELOCITY MEAN (DECIMAL NUMBER 9(6).999 IN 100) 129\* BU VELOCITY NUBS (DECIMAL NUMBER 9(6).999 IN 100) 150\*

```
SUDH EL N INON-NEY INTEGER LUMBER 999 IN 100)
141*
      500M EL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
142*
      SOUR EL STU (DECIMAL NUMBER 9(6).959 IN 100)
145*
      500h LAT DEFL N (NON-KEY INTEGER NUMBER 999 IN 100)
144*
      500M LAT DEFL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
145*
      500h LAI DEFE SID (DECIMAL NUMBER 9(6).999 IN 100)
      SUOM VELOCITY IN LINUIT-KEY THIEGER HURBER 999 IN 1001
146*
147*
      SUOP VELCCITY MEAN (DECIMAL NUMBER 9(0).999 IN 100)
148*
      SUOM VELCCITY STO (DECIMAL NUMBER 5(6).999 IN 100)
149*
      SUDM ELAPSED TIME IN CHUN-KEY INTEGER NUMBER 999 IN 100)
150*
      SUDE ELAPSED TIPE FEAR (DECIMAL NUMBER 9(6).999 IN 100)
151*
      SUUM ELAPSEU TIME STU (DECIPAL NUMLER 9(6).999 IN 100)
152*
      SUOM CHE (GUH-KEY LECT-AL NUMBER 9(6).999 IN 100)
155*
      SUOP PERCENT WITHIN (DECIFAL NUMBER 5(6).999 IN 100)
154*
      SOOK TAKELI WILLH (NOI - KEY DECIMAL RUMBER 9(6).999 In 100)
155*
      SUOP TARGET HEIGHT (NCN-KEY DECIMAL NUMBER 9(6).599 IN 100)
156*
      SUOP VERT TARGET CENTER INDI-KEY DECIMAL NUMBER SIE1.999 IN 1
      00)
160*
      BOOK EL & (RUN-KEY INTEGER NUMBER 999 IN 190)
161*
      800K EL MEAR (LECIMAL NUMBER 9(6).999 IN 100)
      BOJH EL SIL (LECIMAL NUMBER 9(6).999 IN 100)
1624
163*
      BOOK LAI WELL A INGN-KEY INTEGER RUMBER 999 IN 100;
164+
      GUOT LAT LEFT TEAN (BECITAL BUTBER 9(6).999 IN 100)
165*
      BOOF LAT LEFT SID (DECIFAL LUMEER 9(6).999 IN 100)
      BUON VELCCITY IN INCH-KLY INTEGER NUMBER 999 IN 100,
166*
167*
      BOOM VELCCITY FEAR (DECIMAL NUMBER 9(6).999 IN 106)
1684
      BOOF VELOCITY STD (CECIMAL RUMBER 5(6).999 IN 100)
169*
      800M ELAPSEO TIME N (NON-KET IT.TEGER NUMBER 999 In 100)
170+
      BOOK ELAPSED TIME FEAR (DECIMAL NUTBER 9(6).999 11, 100)
1714
      BUOK ELAPSED TIME STO (DECIPAL HUMBER 9(6).999 IN 100)
172*
      BUOK CPE (NCH-NEY DECIFAL NUMBER 9(6),999 IN 100)
175*
      BOOM PERCENT WITHIN (DECIMAL NUMBER 9(6).999 IN 100)
174*
      BUDY TARGET WILTH (NON-KEY LECIFAL LUMBER 9(6),959 IN 100)
1/5*
      BOOK TERGET HEIGHT (NOW-KEY DECIMAL WORRER 9(6).599 IN 100)
176*
      BOOK VERT TARGET CENTER (NON-KEY DECIMAL NUMBER 516).999 IN 1
      00)
179*
      IMPACT EL IT (HUN-KEY INTEGER HUMBER 999 IT 100)
180*
      IMPACT EL REAM (DECIMAL MUMBER 9(6).999 IN 100)
161*
      IMPACT EL STO (HON-KLY DECIMAL NUMBER 9(6),999 IN 100)
162*
      INPACT LAT WEFL N (NOW-KEY INTEGER NUMBER 999 IN 100)
183*
      IMPACT LAT DEFL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
184*
      IMPACT LAT WEFE STO (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
1654
      IMPACT VELOCITY IS THOK-KEY INTEGER RUMBER 999 IF 1001
      IMPACT VELUCITY MEAN (DECIMAL NUMBER 9(6).999 IN 100)
186*
      IMPACT VELOCITY STD (MCN-KEY DECIMAL RUMBER 9161.995 IN 100)
107*
      IMPACT KANGE & (NON-KEY INTEGER NUMBER 999 IN 100)
188*
      IMPACT HANGE MEAN (DECIMAL NUMBER 9(6),999 IN 100)
189*
190*
      IMPACT KARGE STO (DECIFAL MERBER 9(6).999 IN 100)
1914
      TIME TO INPACT A CON-KEY INTEGER NORBER 999 IN 1001
192*
      TIPE TO IPPACT MEAN (NON-KEY DECIMAL NUMBER 9(6).955 IN 100)
      TIME TO IFFACT STO THOR-KEY DECIMAL HUMBER 9161.995 IN 1001
193*
198*
      DATA SET WORDER INDIVEREY INTEGER NUMBER 999 IN 1001
      ROPBER INVALID ROS (NOC-KEY INTEGER NORBER 999 IN 100)
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200* R BY-R INFO-RALAR (RG IN 100)
       ROURE NUMBER (INTEVER NUMBER 999 IN 200)
 202*
       TIFK (GOW-KEY DECIMAL RUMBER 9(6).999 IN 200)
 203*
        THE THUN-KEY DECIMAL NUMBER 9(6), 999 IN 2001
 205*
       IK VELOCITY (NUM-KEY DECIFAL NUMBER 9(6).999 IN 200)
       TIEG (NOD-KEY DECIMAL DUBBER 9(6).999 IN 200)
 206*
       BO HANGE (NOK-KEY DECIMAL NUMBER 9(6).999 IN 200)
 20E*
       HC ELEV (HOW-KEY DECIMAL BURBER 9(6).999 IN 200)
       BU LEFE (KON-KEY DECIMAL KUMBER 5(6).999 IN 200)
 209*
       BU VEC (KON-KET GECIMAL NUMBER 9(6),999 IN 2007
 21U*
 211*
       ROCKET SEIGHT (DECIMAL NUMBER 9(6).999 IN 200)
 2124
       PING VEL (NUK-KEY INTEGER HUFGER 999 IN 200)
 213*
       WIND LIK (NOL-NEY INTEGER NUMBER 9999 IN 200)
 2144
       RUCKET ROTOR RESISTANCE (CECTRAL NUMBER 9761,955 IN 200)
 215*
       FUZE ACTION INGN-KEY MAKE XIS) IN 2001
       SOOP EL (CON-KEY DECIMAL CUMBER 9(6):999 IN 2001
  2204
 222*
       SOUR LAT DEFL (NON-KLY DECIMAL NUMBER 9(6).999 1, 200)
 224+
       500F ELAPSED (THE (NUN-KEY DECIMAL NUMBER 9(6).999 IN 200)
 225*
       SOOF VELUCITY (NON-KEY DECIMAL NUMBER 9(6).999 1% 200)
       SOUR EL (RUN-KEY DECIRAL RUMBER 9(6).999 IN 200)
  236*
 232*
       800h LAT LEFT (NOG-KEY DECIMAL NUMBER 9(6).999 in 200)
  233*
       BOOK ELAPSED TIME (NON-KEY DECIMAL NUMBER 9(6).995 IR 200)
 234*
       800% VELOCITY (NOW-KEY DECIMAL NUMBER 9(6).999 IN 200)
  2354
       TIME TO IMPACT THUN-KEY DECIMAL NUMBER 9(6):995 IN 200;
 236*
       IMPACT RANGE (NON-MEY DECIMAL NUMBER 9(6).999 IN 200)
 237*
       IFPACT EL (NUN-KEY DECIMAL NUMBER 9(6).999 IN 200)
 236*
       INPAC! LAT DEFL (NON-KEY DECIMAL NUMBER =(6).959 IN 200)
       IMPACT VELOCITY INCH-KEY DECIMAL NUMBER 9(6).959 IN 200)
 239*
       FUZE LOT (NAME X(12) IN 200)
       RELAG (MAME X IN 200)
       R BY R TIME HISTORY-RADAR (RG IN 200)
  240*
   241* ELAPSED TIME (NOW-KEY DECIMAL NUMBER 9(6).995 IN 240)
   242*
         NAME (MUN-MEY DECIMAL MUMBER 9(6).999 IN 240)
   243* VELUCITY (NON-KEY DECIMAL NUMBER 9(6),999 IN 240)
   244*
         DEFL (HUH-KEY UELIMAL NUMBER 9(6).999 IN 240)
   245* ELEV (NUK-KET DECIMAL NUMBER 5(6).999 IN 240)
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300* PROP TEST INFO (RG)
301* FINAL INSTITUTE DATE (DATE IN 300)
302* APPROX LEST DATE (DATE IN 300)
303* LOT RECOPPENDATION (NAME X(10) IN 300)
304# TALIANI LCI VALUE (NON-KEY DECIMAL NUMBER 9(6),959 In 300)
306* MOTOR TOBE LOT (NON-REY NAME X(12) IN 300)
307* IGNITER LOT (NON-KEY NAME X(12) IN 300)
308* NOZZLE FIN LOT (NUN-KEY NAME X(12) IN 300)
305* TALIANI STATUS (NAME X(6) IN 350)
320* STATIC TEST INFO-PROPELLANT (NG IN 300)
321* EARLY MAXIMUM 165 N (NON-KEY INTEGEK NUMPER 995 1N 320)
322* EARLY FAXIAUR 165 MEAN (DECIMAL NUMBER 9(6).995 1K 320)
323* EARLY PAXIBUR 165 STO (DECIMAL NUMBER 9(6).999 1n 320)
324* EARLY MAXIMUM 165 STATUS (HARE X(E) IN 320)
325* LATE MAXIMUM 165 II (MON-KEY INTEGER NUMBER 999 IN 320)
326* LATE MAXIMUM 165 MEAN (DECIMAL NUMBER 9(6).999 IN 320)
327* LATE MAXIMUM 165 STD (DECIMAL NUMBER 9(6).999 14 320)
326+ LATE MAXIPUP 165 STATUS (MAME X(E) IN 320)
329* FORMULA TIME 130 N (NON-KEY INTEGEN NUMBER 9(7) 18 320)
330* FORFICIA TIME 130 HEAR (DECIMAL NUMBER 9(6).999 In 320)
331* FURPLEA TIME 130 STD (DECIMAL NUMBER 9(6).999 In 320)
332* FURHULA TIPE 130 STATUS (NAME X(6) IN 320)
353* FURNULA TIME MINUS 10 N (NON-KEY INTEGER NUMBER 5(7) IN 320
334* FORMULA TIME MINUS 10 MEAN (DECIMAL NUMBER 9(6).999 IN 320)
555* FURKLEA TIME MINUS 10 STD (DECIMAL NUMBER 9(6).999 IN 32C)
336 FORNULA TIME MINUS TO STATUS (NAME X(6) IN 320)
350* PROF ATTRIBUTE INFO (NG IN 300)
351* PROP SPECIFICATION (NON-KEY NAME X(15) IN 350)
352* PERCENT DEFECTIVE CRITICAL (DECIMAL NUMBER 9(6).999 IN 350)
353* PERCENT DEFECTIVE MAJOR ASSEMBLY (DECIMAL NUMBER 5(6).995 I
H 350)
354* FERCEGI LEFECTIVE MINOR ASSEMBLY (DECIMAL NUMBER 9(6).999 1
N 350)
355* PERCENT LEFECTIVE XRAY (DECIMAL NUMBER 9(6).995 1A 350)
366 PROP ATTRIBUTE FAILURE INFO (RG IN 350)
361* PRCP ATTRIBUTE NAME (NAME X(20) III 360)
362* PRCP FAILURES +165 (INTEGER NUMBER 99 IN 360)
363* PACP FAILURES +150 (INTEGER NUMBER 99 IN 360)
364* PROP FAILURES -10 (INTEGER NUMBER 99 IN 360)
365* PROP FAILURES -65 (INTEGER NUMBER 99 IN 360) 366* PROP FAILURES TOTAL (INTEGER NUMBER 99 IN 360)
366* PROP PAILURES TOTAL (INTEGER NUMBER 99 IN 360) 367* PROP ATTURES EVALUATION THAME X(6) IN 360)
2014 LEGG WILLIAMS CAMEDATION THATE WICE TH 2001

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4001* ALDS (RG)
 4002* ZZZZ (NON-KEY TEXT X(ZO) IN 4001)
 500* STATIC TEST INFO-MOTOR (RG)
  501* MUTCR STATIL DISPOSITION (NAME X(6) In 500)
   520* FUTUR STATIC TEST (RG IN 506)
          CONCITICATION TEMP (NAME X(6) IN 520)
    521*
          MUTUR TEST DATE (DATE IN 520)
    523*
    530+ MOTOR H BY R STATIL TEST INFO (RG IN 520)
            KUTUK KLIPLEK (IRTEGER KUMBER 95 IN 530)
            MOTUR RESISTANCE (LECIMAL NUMBER 99.99 IN 530)
       532*
            YOTOR LARLY MAXIMUM THRUST (DECIMAL NUMBER 9161.59 IN 530
       5334
            MCTOR LATE MAXIMUM THRUST (LECTHAL NUMBER 9(6).59 IN 520)
      5344
            FOTOR IGRITION DELAY (DECIMAL NUMBER 9.999 IN SEU)
900*
      PATA CARL INFO (No)
        COMPONENT WATE (MALE X(10) 11, 900)
   902* CUPPURENT Y LUMBER (NAME X(10) 1k 900)
   SIC* COMPONENT LOT INFO (RG IN 900)
          COMPONENT LOT (MAPE X(12) IN 910)
    512* COPPCHENT GUANTITY (LON-NEY INTEGER NUMBER 9(6) IN 910)
    913*
          CORPURERT DATE (NUN-KEY DATE IN 916)
 920* CUMERT TAFE (RG)
   921* CUMPENTS (NUN-NEY TEXT X(80) IN 920)
 600+ PALLISTIC TEST INFO-KARHEAD FUZE (RG)
   601* WHO TEST PHASE (NAME X(10) 18 600)
        KIND SAFPLES (HIGH-KEY THIEGEN NUMBER 999 IN 600)
   €02*
   603* WHO DULS (INTEGER NUMBER 999 IN 606)
  604¥
        MCTUR LUT FIRED ON (NAPL X(13) IN 600)
   605*
        LUI, RELATED RALAK DATA (RG IN 600)
    606* "CTOR ROUGE OF DUD (NOM-KEY INTEGER RUMBER 999 11, 605)
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FUZE (STHING (PYINT/NAME.STUB.GROUP.NULL SUPPRESS.HEFEAT SUPFRE
4009*
       SS/BY ENTRY.C1.C2.C3.C4.C5.C6.C7.C9.C10.C11.C12.C14.C15.C400.C4
       50.C452.C480 aH C5 L6 *1*%*2221*%))
      FOTOK (STRING (PRINT/HAME.STUB.GROUP.NULL SUPPRESS.REPLAT SUFPR
       ESS/BY ELTRY.C1.C2.C3.C4.C5.C6.C7.C9.C10.C11.C12.C14.C15.C500.C
       520.C560.C562 WH C3 EG *1*%*ZZZI*%))
       ZZZ1 (STRING (MESSAGE FILE IS OUTPUTEPRINT/NULL SUFPRESS.STUE S
4003*
       CPPRESS7ZZZZXI)
       ARIES (STRING (PESSAGE FILE IS DUB. ECONTRULEOBN IS ANALSENESSAG
4004*
       E FILE IS OUTPOTE PRINT/KULL SUPPRESS, STUB SUPPRESS/2222811
       DISPLAY (STRIRG (PRINT/NAME.STUB.GROUP.NULL SUPPRESS.REPEAT SUP
4005*
       PRESS/BY EXTRY-CI-C2-C3-C4-C5-C6-C7-C9-C10-C11-C12-C14-C15 WF C
       3 Eu +1+5+2221+2))
       COMMANT ISTRIKG TPRINTYWAME.STOB.GROOF.MULL SUPPRESS, MEPEAT SCP
       PKESS/BY ENTKY-C1-C2+C5+C4+C5+C6+C7+C9+C10+C11+C12+C14+C15+C10G
        #H C3 E4 +1+2+2221+21)
       CUMPLET (STRING (PRINT/NAME.STUB.GROUP.NULL SUPPRESS.REPEAT SUP
4007*
       PRESS/BY EATRY.C1.C2.C5.C4.C5.C6.C7.C9.C10.C11.C12.C14.C15.C260
       .L262 NH L5 EU *1*%*///1*%))
       FROP (STRING (PRINT/NAME.STUB.GROUP.NOLL SUPPRESS, REPEAT SUPPRE
       $$/BY ENTKY.C1,L2,C3,C4,C5.C6.C7,C9,C10,C11.C12.C14.L15.C300.C3
       50-C360 KH C3 EU *1*2*2221*11
       CLEAR RF (STRING (REPOVE C214 WH C214 EXISTSXCLEARX))
3002*
              (STRING (WATE #1## THEK AND CZIA EN #2## WHERE #3#%TACL!
               AUTURATICALL(%))
             TSTRING (PRINT/BLCCKTSTUB SUPPRESS/# REPORT FILE
       FILET
                    OF SCRIEE #1#SPRINT #1# WHERE #2#$1)
       FILES (STRING (PRINT/BLOCK.STUB SUPPRESS/% REPORT FILE
                    DESCRIBE *1*%PRIG" *1* WHERE *2*%))
       FILES ISTRING (PRINT/BLUCK.STUB SUPPRESS/2 REPORT FILE
                    ULSCRIBE *1*%PRIMI *1* WHERE *2*%))
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                    LESCRIBE #1 # SPRINT #1 # whERE #2 # $1)
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2005*
                    LESCY IRE +1+%PHINT +1+ WHERE +2+%1)
              TSTRING (PRINT/BLOCK, STUG SUPPRESS/% REPORT FILE IS FILE6
                    DESCRIBE +1+2PRINT +1+ where +2+#1)
       FILLY (STRING (PRINT/BLOCK-STUB SUPPRESS/% REPORT FILE IS FILE?
2007*
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                    LESCATHE *1*SPRINT *1* WHERE *2*5))
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2009*
                    UESCRIBE *1*SPRINT *1* WHERE *2*$))
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       FILE11 (STRIKE (PRINT/BLOCK-STOR SUPPRESS/% REPORT FILE IS FILE
2011*
                     HESCHIDE *1*SPRINT *1* *HERE *2*%))
        11%
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2012*
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               (STRIBL (PRINT/BLUCK, STUB SUPPRESS/# REPORT FILE IS FILE
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2015*
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EXAMPLE

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ASSIGNED ARTIL 50 626 10/22/75 11.18.47.	
AFILLICLS.C4 EG H490 AND C112 EQ TEST AND C931 EXISTS	
*FILE2(C412*C* LV M490 AND C112 EQ TEST)%	
*FILE4(C431,C4 EU M490 AND C112 EO TEST)* *FILE5(C432,C4 EU M490 AND C112 EO TEST)*	
LNU SYSTEP 2000	
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C 1094824 FOREST OFAR AND VARIABLE CAR COMPRESS OF WERE TAKEN COURSES	-
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L LUVERES LERAY AMOVATING OVERHILLS OF MORE TRIPUT GROUPS	
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\$HIST IDEP=5.6EAR=10.KUP=0.50.KLOW=0.\$	
\$#1\$1_Ubl:=2*Hbhm=1b*Rui'=3900**KLUW=3600.\$	
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			FILE CONT	ENT SUMMARY FOR THIS RUN
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5	412	INTEGER	VEL CORR	MEAN-HEP
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5	452	DECIMAL	PE VERT	
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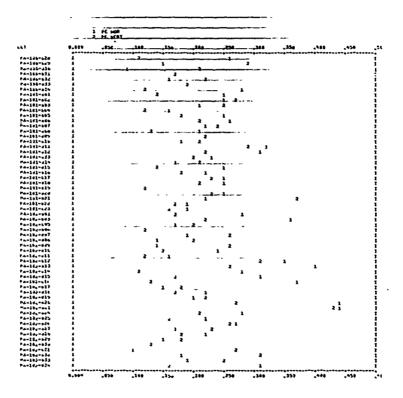
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_ 4	MA-100-031	•170	.170	
5 6	MA-100-032 MA-100-033	.160 .190	•220 190_	
7	MA-100-034	.260	.120	
<u> </u>	MA-101-001	.250		
9 10	MA-101-002	-250	•270	
11	MA-101-003	.160	<u>^250</u> •120	
12	MA-101-005	.250	180	
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		***************************************	401814	KNUMAUS ALAUUTSIA	4	
1 2.16	4940 - 4410 -	011000 X 14410	FREGULACY	PERCENT	CUMULALIVE FFEG.	LEPER BOUND PRECENTAL CURINALIVE FEED CUMILATIVE PERCENT
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ο.	3800,000	3402422	O	7004	B	
,	3610.000	3619,499	2	0 ° 0	•	) # ) #
- 3	3620.000	3622,292		25.6		
41	3836,000	3839,999	11	10,33	10 (1	10.12
	000-0448	554 5 Hd 5	12	20,00	25	
-	4656.000	964, 6685	19	51.67	<b>3</b>	10,01
	200.0044	586 CONS	12	20.00		
3	24.7 1. 1.01	666.6748	'n	00.0	99	96.33
n 5	200-0-0-0	5469.999	1	1.67		100.00
11	5646.000	3679,999	0	00.0	09	100.00
25	35000000	*******		0000	- BB	THE PROPERTY OF THE PARTY OF TH
			17.434	YEL. CURK. CEAUSHEP	£P	

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EXAMPLE

No. 2

LAW DATA BASE

#### LUN IS LANZ ASSIGNED LAW

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*FILE1(LUI. CALIDER EN 66 MM AND INITIAL DISP EO F . N. PHASE EO ACC+701%
*FILE2(TEST DATE. CALIBER EQ 66 PH AND INITIAL CISP LG A)%
*FILES (GUALTITY . CALIBER EQ 66 MM AND INITIAL DISF 26 A)%
                CALIBLE EQ LE PH'AND INITIAL DISF LE AIX
*FILE4(LUT
AFILES(VEL FLAR .CALIBER EQ 66 MM AND INITIAL DISP LG A AND PHASE EQ ACC+701%
                .CALIBER EU 66 MM AND INITIAL DISP LE A-AND PHASE EG ACC+701%
*F1LE6(L13c
                CALIBER EO 66 MM AND INITIAL DISP CG A AND PHASE EO ACC+701%
*F1LE7(C157
                .CALIDER EQ E6 MM AND INITIAL DISF ES A AND PHASE EQ ACC+701%
*F1Ltd(C112
*FILE9(VEL NEAR *CALIBER EQ 06 MF AND INITIAL DISF EG A AND PHASE EQ ACC+140) **
*FILETOLVEL MEAN . CALIBER ED 66 PM AND INITIAL DISF ES A AND PHASE ED ACC-40)*
*FILEIT(VEL FEAL+CALIBER EO 66 MM AND INITIAL DISF & A AND PHASE EO DROP+70)%
*FILE12(VEL MEAN, CALIBER EU 66 MF AND INITIAL DISF & A AND PHASE EG W-PEN)*
LX11%
LNU SYSTEP ZUOL
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#### --- INPUT CARD SUMMARY FOR THIS RUN ---

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C
     SAPPLE ARIES INFUT DECK STRUCTURE
 FLOPMENT HERE IS A SAMPLE OF THE ARIES SYSTEM IN ACTION FOR LON IS LAW
 FOUTPOT LIST=15
 $BASIC LIST=1.11=9.12=10.15=11.14=12$
 $UASIC LIST=1.11=5.12=6.13=7$
 SPLCT 102P=7.INL1=55
 $ARE6 ILLF=5, INU1=6, INU2=7$
 $5REG IDEP=5. 1AU1=6.IAU2=7.11KAN1=13. IRES=1. LIST=1$
 $11Ft 10tF=5.INC1=2.11m2=45
 $11PE 10EP=5.In01=2.1002=4.YM1K=0..YMAX=1000.s
$11FE 10EP=5.1hb1=2.1nb2=4.YBAk1=475..YHAk2=525..YM1N=400..Yr AX=60C.$
 $LUTPL1 10EP=1.1NC1=6.1NU2=7$
SHIST ICEP=55
STABLE ITABLE=13
```

## --- FILE CUNTENT SURMARY FUR THIS RUN ---

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LLEMENT
        LLEMENT
                  ELEMENT
FILE
                             NAME
NUMBER
        NUMBER
                   TYPE
                            LUT
                  NAFE
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             3
                             ILSI DATE
                  LATE
   2
            10
                             VIIIIAUU
   3
             5
                   INTEGER
                             LUT
             3
                  NAKE
   4
   5
                  BELIMAL
                             VEL MEAN
           122
                   UEC1FAL
                            MAX HURZ DISPLACEMENT
   £
           136
                             MAX VERT DISPLACEMENT
                   ULL1r.AL
           137
   7
                             VHRIFM! JEHH
                   INTEGER
   8
           112
                             VEL MEAN
                   JEL1HAL
   9
           122
                             VEL BEAR
                   UECIMAL
           1<2
  10
                             VEL FEAR
                   ULLIFAL
  11
           122
                             VEL PLAN
                   JEC1PAL
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  13
               EPITY FILL
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               FWHIY FILL
  15
                ERFIY FILL
                EMPTY FILL
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SOUTPUT

LIST = 1.

SENU

LISTING 49 49 LT -414

1	٠.	•	•	•	•	,	•	,
W-1417	ML 7145	-42 HAL D	P45 1247 L	APRICAT IL	of a PEAL	WL PLAN	WE PEAR	ML MAY
		DELMINE	INTACCOLO		W. L	45 400	***	ALL MA
1441.600	******	-41-040	30.104	********	490.252	427.250	979.5es	473.746
17.600	+75.07:	-10-300	20.240	********	177,017	17.647	476.188	468.126
1002.006	440.344	24.155	34.627	*******	*36.418	939,348	944,500	944,240
4+23.00+	**1.634	21-376	49.731	*******	976.200	927.500	979,792	*40.619
3457.866	486-630	-21-191	**.#27	**10*****	497.968	934,333	977.634	944.459
5000.000	-13.000	10.716	*0.031	*******	490.168	433.208	953,529	979,389
>~13.66~	474.145	-13-145	43.210	*******	559.869	754.983	479.040	174.960
1324.000	*****	-17-117	43.642	*	199.0(8	934.010	418,201	492.420
1.69-000	•71.366	30.970	34.346	******	*73.000	433.589	477.100	482.266
1004.880	*35.389	21-727	*2.167	******	496.309	433.360	477.059	477.300
** 55.060	*61.36*	-53-536	***535	*******	499.3(8	431.388	487.500	472.358
****	484.734	*** 17*	30.003	********	388.958	433.188	449.488	476.779
*****	443.306	32.434	*****	********	541,223	433.058	479,686	977.268
7023.0\$0 3746.860	**4.1*3	-12-67-	34.379	********	499.860	434.199	~83,785	*******
**12.000	******	26-349	11.748	*********	190.1[0	434.988	477.040	*******
2773.04	******	37.034	30.033	*********	498.308	449.319	*89,106	******
1253.000	904.023	23.34	41.634	*********	99,1(0 930,200	442.648	*43.644	******
1'00.600	3744743	10 473	33.071	*********	174.7(8	447.688	482.647	*********
4-67-554	*****	******	**-130	********	173.160	939.788	********	*********
*****	974-374	30.013	-2-247	********	434.468	*23.383	101.706	*********
2011.000	******	-14-249	62.262	********	977.750	991.789	470.050	*********
2140.040	******	27-282	48.000	*******	*94.46*	917.400	988.758	********
~4.01.000	472.052	-23-793	**.277	********	994.758	939,188	328.584	*********
>->3.000	401.043	34-135	*4.274	*******	470,452	*13.211	401,006	*******
3253.040	471.500	-50.003	35.000	********	994.058	933,183	447.000	*******
w*0.86*	****.147	31-431	37.433	******	497.656	434.263	977.333	********
22.42.844	*****	33+749	33.374	********	996,469	*36.619	462,928	*******
34 77. 24.	*****	33-463	601	********	*98.326	433.040	470.346	********
	*****	31.448	20.457	********	976.858	489.248	477,000	*******
1.15.000	477.244	-10-002	41.272	********	494.158	*32.368	477.266	********
4177.460	******	-70-076	*3.180	********	997.368	434.648	478.326	********
****	******	20-627	-13.240	*******	493.469	4:4.473	*80.544	******
60)0.P( 6	*10.250	27-091	-27.001	********	173.007	937.200	443.642	******
*** 20.012	463.747	-33-439	-22.795	********	***.068	437.968	**1.565	*******
/7'00.000	****	-70-168 -34-631	164,45	*********		*********	*******	******
25:10.50	983.27	(2:01	32.072	**********	*********		********	******
23419.043	******	19-572	37.072	*********	*********	*********	*********	*********
70100.660	******	21.403	37.150	*******	*********	**********	*********	********
241/8.000	*****	10.370	91,636	********	*********	*********	********	********
230 *0.610	******	******	17.973	*********	*********	*********	*********	*********
******	204-115	20.003	31.700	*********	********	********	*********	*********
21707.600	*** **3	21-977	91 809	********	********		*********	**********
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## LISTING CH INPUT DATA

	1	2	3	4	5	
VEL f	REAR	VEL FEAR	VEL HEAN	VEL MEAN		
44	98.222	429.260	479.500	473.700		
	95.009	427.067	476.100	480.100		
-	36.600	434.500	480.500	484.300		
	96.200	452.40u	476.7vu	480.600		
	97.900	454.333	479.000	480.80u		
	38,100	433.200	461.500	479.500		
	00.600	434.460	479.800	478.900		
45	99.800	434.600	460.200	462.600		
45	95.860	430.500	479.100	461.100		
គ <u>់</u> (	98.300	455.300	477.800	477.500		
45	99.3GU	431.300	465.500	478.500		
50	00.400	435.106	464.468	476.776		
50	01.535	435.600	479.600	479.000		
4 9	9.800	436.100	483.900	********		
45	96.16U	434.500	479°660	********		
49	98.300	440.300	464.100	********		
49	95.100	442.666	483.600	*******		
- 51	98.20u	447.600	462+667	********		
49	98.900	441.545	484.600	********		
49	95.100	434.706	465•8UQ	********		
	94.606	435.506	481.700	*******		
49	97.766	441.700	475 <b>•</b> 600	*******		
	96.460	437.606	460.760	********		
	98.7CU	439.100	462+500	********		
	96.660	443.206	481-500	********		
	96.000	435.125	40Z•UUG	*******		
	97.000	454.208	477.333	*******		
	96.460	436.600	401.900	********		
	94.556	435.600	478+369	*******		
	96.800	435.200	479-000	*******		
	96.100	435.500	479 • 200	********		
	97.30u	430,600	470-500	*******		
	35.40v	424.000	480.444	********		
	95.669	457.200	465•60g	********		
43	94.800	437.500	461.000	*******		
	CAUTIO	NUREGUAL 1	Withth Of Ob	SERVATIONS IN	ANALYSIS FILES	
FILE	NC.	NUFFER OLS				
9		35				
16		<b>35</b>				
11		JŜ				
12		13				

NUMBER OF CESERVATIONS 35 15

MEAN VALUES 497.617 430.031 460.858 479.644

STANDARL DEVIATION 2.2060 2.5490

\$BASIC

LIST = 1.

11 = 5.

12 = 6.

13 = 7.

14 = 0.

15 = 0.

16 = 0.

17 = 0.

19 = 0.

110 = 0.

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LISTING OF	INPUT UATA				
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1	2	•	•		
VEL PEAG	HAX HCHZ U	MAX VERT U			
•	ISPLACEMEN	15PLACEMEN			
480.375	-21.020	46.182			
475.875	-18.366	26•560			
480.500	14.755	38-027			
481.250	21.596	40.931			
482.250	-11.191	44.827			
481.000	16.716	48.031	•		
478.125	-15.100	63.218			
480.000	-19.117	43.882			
477.500	36.470	54.348			
479.500	21.757	43.167			
481.500	-25.296	46.292			
482.750	46.794	50+443	• •		
485.500	32.630	44.428		_	
482.145	-12.694	34.579			
480.667	26.565	44.929			_
485.833	24.476	50-615			
484.875	24.056	61+059			
482.833	20.565	53-291			
462.714	10.595	57.009			
480.625	20.401	44-138			
476.571	36.405	47.969			
485.857	-12.364	65.205			
484.250	37.009	46•868 56•277			
481.000	-23.793	56.558			
483.625	32.135	33.668			
481.060	-30.041 105.15	37.233			
480.167	32.75	35.596			
480.675 479.375	23.20U	-44.601			
480.375	31.448	30.457			
479.500	+10.064	41.292			
477.875	-28.896	43.100			
480.145	20.627	-15-268			
478.250	21.661	-25-461			
480.429	-33.235	-22.905			
482.026	-20.100	26.227			
483.456	-32.631	24.047			
483.391	25.065	33-672			
488.225	19.392	37.056			
487.041	21.245	32•963			
491.410	10.376	41.656			
489.625	-20.645	57•443			
48t.775	20.665	30•984			
490.275	21.977	41•069			

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### VAKIANCE-COVARIANCE PATRIX:

13.83 12.16 16.65 12.16 626.1 34.05 16.65 34.05 524.2

### LUKHELATION MATRIX:

1.000 .1307 .1956 .1307 1.000 .5946E-01 .1956 .5946E-01 1.000

PEARS: 482.1602

8.5521 37.0878

STANDARD DEVIATIONS: 3.7160 25.0226 22.0957

NUMPER UPSERVATIONS: 44

\$PLOT

11102

IULP = 6

INU1 = 5

1ND3 = 0

1ND4 = 0

INU5 = 0.

LENX = 120.

LENY = 120.

XM18 = -0.99E+02+

XMAX = -0,99E+02+

YMIH1 = -0.99E+02.

YM1N2 = -0.99L+02.

YMINS = -0.99E+ú2. YMINA = -0.998+02. YMIN5 = -0.99E+02, YMAX1 = -0.99E+u2. YP.AX2 = -0.99E+u2. **EXAMY** = -0.99E+u2. YMAX4 = -0.998+02. YMAX5 = -0.996+02. **S**END

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DESCRIPTION OF FLOT VARIABLES

MAX HORZ GISPLACEMEN VEL MEAG

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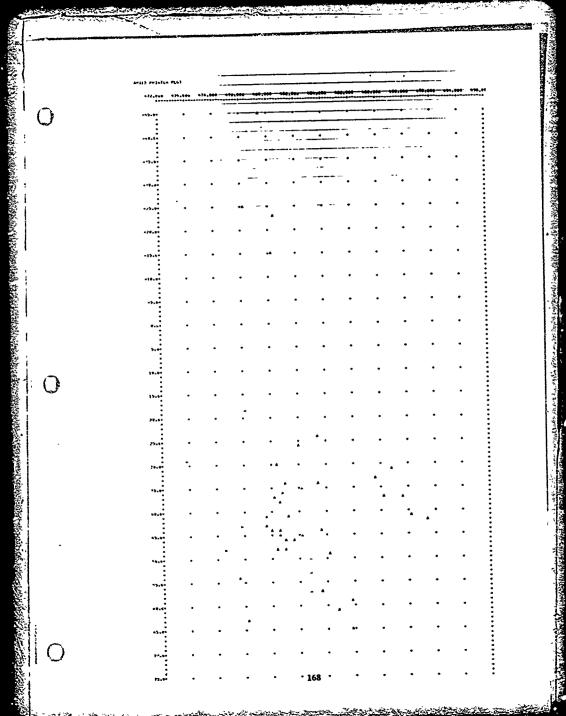
Property Mars

THE DAY WEST THE STREET STREET STREET STREET STREET STREET STREET

**SPLOT** IDEP 7, INU1 1802 ú. INU3 Ú. 18104 INUS LENX 120. LENY 120. AIMX = -0.99E+U2. XMAX = -0.99E+02. IALMY = -6.99E+02. TMIN2 = -U.99L+U2. ENIMY = -0.99E+U2. YMIK4 = -0.99E+02. YMIN5 = -0.99E+02. YMAX1 = -0.99E+02. YMAX2 = -U.59E+U2. = -U.99E+U2. **EXAMY** YMAX4 = -0.99E+02. YMAX5 = -0.99E+u2+ SENI

DESCRIPTION OF PLOT VARIABLES

X MAX VERT UISPLACEMEN VEL MEAN



```
SMREG
LIST
            Ü+
IULP
INÚ1
ITRAN1
KTKARL
            0.0.
11112
SHAHTI
RTRAN2
            0.0.
IND3
EJANT1
HTHALS
            0.0.
INU4
            Ű,
ITRAN4
            Ű •
RTKAN4
            0.0.
                        VARIANCE-LOVARIALCE PATRIX:
INDS
            0.
ITRAK5
                         626.1
                                      34,00
                                                   12.16
                        34.08
                                      524.2
                                                   16.65
                        14.16
CAANTH
                                      16.65
            U.U.
                                                   13.83
                       CURRELATION MATRIX:
IKES
IPLT
                        1.000
                                      .5948E-U1
                                                   .1007
SEND
                        .5948L-01
                                      1.000
                                                   .1956
                        .1307
                                      .1956
                                                   1.000
                       MEANS:
                           6.5521
                                       37.0678
                                                   462.1602
                       STANDARD DEVIATIONS:
                          25.0220
                                       22.8957
                                                      3.7168
                      NURBER UBSERVATIONS:
```

## ARIES MULTIPLE REGRESSION ANALYSIS

NUMBER IND VARIABLES= 2 NUMBER OBS= 44

DETERMINANT OF CORRELATION MATRIX= .99646

MULTIPLE R= .229 FRUITIPLE RSG= .052

F RATIO FOR ANOVA CN R= 1.135

UF1= 2 .DF2= 41

IND VAR DO. B BSQ RXY B\*RXY **KXY/R** 1 .1195 .0143 .1307 .0156 .5704 2 .1865 .0355 .1956 .0369 .8538

INU VAR NO. MEAR: STU DEV RAW WLIGHT

1 8.5521 25.0226 .01776
2 37.0878 22.8957 .03062

CUNSTANT= 480.8929

IDEP = CURSTANT + HWIXIND1 + HW2XIND2 + ...

DEPENDENT VARIABLE-10LP UN FILE 5 VEL MEAN
INDEPENDENT VARIABLE-IND1 ON FILE 6 MAX HURZ DISPLACEMEN
INDEPENDENT VARIABLE-1ND2 ON FILE 7 MAX-VERT DISPLACEMEN

**SSREG** 

LIST = 1.

10EP = 5

IND1 = n.

ITRAN1 = 13

KTRA61 = 0.0.

IND2 = 7

ITRAN2 = U.

RTRAN2 = 0.0.

التطابة بعيا والتعدد فالمعلوب ويستعادها والمسابق بالمراب المسابق

IND3 1TRANS CAANTH 0.0. 11114 ITRAN4 PARHTH INU5 Ű. 1TKAN5 RTRANS = 0.0. FLEV 0.1E-04. **IRES** IPLT SEND

# VARIANCE-COVARIANCE HAIRIX:

13.83 -315.1 16.65 -515.1 .1953£+06 -407.9 16.65 -407.9 524.2

### CORRELATION MATRIX:

1.000 -.1917 .1956 -.1917 1.000 -.4031E-01 .1956 -.4031E-01 1.000

MEANS: 482.1802 685.0366 57.0878

STANDARU DEVIATIONS: 3.7166 441.9465 22.6957

NUMBER OLSERVATIONS: 44

# LISTING OF INPUT DATA

	-	
1	2	3
VEL PEAN	MAX HORZ L	MAX VERT D
	ISPLACEMEN	ISPLACEMEN
480.375	476.462	48.162
473.875	337 <b>.</b> 310	28•560
48U.5Uu	217.710	38.027
481.250	457.703	40+931
482.250	125.236	44.027
481.000	د279،42	48•031
478.125	220.015	65•218
480.060	<b>363.46</b> 6	45.662
477.568	1479.541	54.348
479.500	473.367	45.167
481.560	856.256	46+292
482.750	2169.678	50-443
485.500	1065.239	44.428
482.145	161.138	34-579
480.667	705.512	44+920
485.835	599.075	56-615
484.875	57è-767	61-059
462.635	555.498	53-291
482.714	345.774	57•005 44•138
480.625	416,201	47•138
476,571	1474.944	47.969 63.665
485.857	155.560	48-868
484.250 361.000	1369.666 1869.666	46.277
465,625	1032.658	56.578
4633623	1357.257	33.00
480.167	576.625	37.233
480.875	1293.122	35.596
479.375	63"•476	-44.601
480.375	950.777	30.457
479.500	264.327	41.252
477.875	854.579	45.100
480.145	425.475	-15-266
478.250	766.230	-25.461
480.429	1104.565	-22.905
482.026	769.61"	26+227
483.450	1064.782	24-047
483.355	629.15/	33.672
488.225	376.050	37.056
467.641	451.350	32.965
491."	35/.751	41.656
489.07	401.602	57.453
488 ' 5	424.560	30.564
490.273	462.989	41.059

ARIES STEPWISE REGRESSION ANALYSIS NUMBER INU VARIABLES= 2 INUMBER OBS= 44 .F-LEVEL= .000010 MEAL VALLES 665.03677 37.06777 482.16020 STANDARO DEVIATIONS 441.94694 22.89571 5.71581 5.71661 STANDARD ERROR OF Y= STEP NUMBER 1 VARIABLE ENTERIAL 2 F-VALUE CALCULATED 1.6/06 DEGREES OF FREEDOM 3-69014 STANLARD ERRUR OF Y 461.00193 REG LONSTANT= .US177 .STANDAKU ERKOR= COEFFICIENT OF X( 2)= PERCENT VARIATION EXPEATRED= 5.83

STEP NUMPER 2
VARIABLE ENTERING 1
F-VALUE CALCULATED 1.4960
ULSTRES OF FREEDOM 41
STANDARD ERROR UF Y 3.66854
REG CONSTANT= 402.10815
CUEFFICIENT UF X( 2)= -.00155 .STANDARD ERROR= ..0127
CULFFICIENT UF X( 2)= ..03056 .STANDARD ERROR= ..2445
PERCENT VARIATION EXPLAINEUT 7.21

STEPWISE REGRESSION FIRISHED

IDEP = COnstant + Heighbur + hwzklabz + ...

DEPENDENT VARIABLE-1DLP OF FILE 5 VEL MEAN INDEFENDENT VARIABLE-INDI ON FILE 6 MAX HGRZ DISPLACEMEN INDEPENDENT VARIABLE-INDIZ ON FILE 7

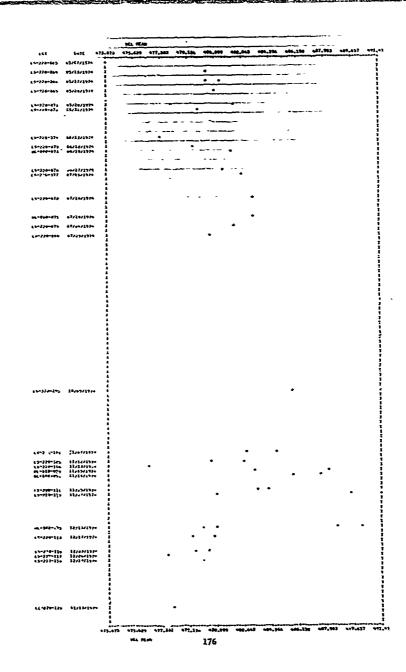
un nu,	. ACTUAL	<b>PREUILIEU</b>	PFAIV(IQN	tek(enT	X(1)	x (2)
1	480.375	482.842	2.467	•51	476.46	46.16
2	473.675	462.458	8.583	1.78	337.21.	28.56
3	480 <b>.</b> 500	406.735	2.435	•50	217.71.	36.02
u	401.250	402.650	1,400	•29	457.76.	40.9
5	402.250	403.284	1.034	.21	125.24	44.82
6	481.000	463.143	2,145	.44	279.42.	48.0
7	476.125	403.687	5.562	1.15	228.03.	63.2
А	460.000	482.883	2,683	.60	365.460	42.8
4	477.500	481.476	3.976	•85	1479.741	54.34
111	479,500	402.694	5.194	•66	4/3.26/	42.10
11	481.500	442.195	.693	•14	858.25	46.25
12	462.750	460.25/	-2.493	52	2185.01	
13	483.501	461.015	-1.665	35	1065.4	50.44
14	462.143	462.715	.172	•16	161	44.4
15	480.667	402.387	1.720	•36	705.516	34.5
16.	485.833	482.977	-2.256	֥59	599.47.	44.9
17	484.675	465.076	-1.797	37		56.8
10	482.833	482.876	.045	-	578.767	61.0
19	462.714	403.315	.601	•01	555.49.	52.29
20	480.625	402.012	2.167	-12	345.,7.	57.0
21	476.571	401.269	4.718	•45	41601	44.1
22	465.857	403.066		.98	1474.541	47.9
23	464.250	401.479	-1,991	43	153.36.	65.21
24	461.000	701.713	-2.771	58	1365.66	48.8
25	483.625	402.238	1.645	• 54	566.10.	46.2
26	451.000	481.040	~1.587	29	1032	5E . 5!
27	450.167		.04ú	•01	1357.257	32.8
5h		461.735	1.566	• 53	976.ne.	37.2
29	480.875	481.192	.017	•07	1298.14.	35.59
36	479.375	479.755	-350	• UE	635.010	-44.6
31	480.375	461.507	1.132	•24	988.571	30.4
32	479.500	402.730	3,430	• /1	284.52.	41.29
32 33	477.875	462.132	4.257	-88	634.57.	42.10
	460,143	456.982	.839	+17	4251.	-15,20
34	476.250	400.142	1.692	•39	766.254	-25 -41
35	480.429	475.636	733	15	1104.56_	-22,90
35	482.026	401.006	346	-•u7	7851.	26.22
37	163.450	461.195	-2.257	47	1064.76	24.04
3£	483.395	462.169	-1.426	25	625.15.	32.87
<b>39</b>	486.225	442.058	-5.567	-1.15	376.050	37.05
40	487.641	402.417	-5.224	-1.68	4515.	32.98
41	491.410	106.050	-8.552	-1.77	337 <b>.</b> /5.	41.65
42	489.625	482.651	-6.774	-1.45	4010_	37.45
43	488.775	402.397	-6.376	-1.52	424.76.	30.98
44	4911.275	402.510	-7.659	-1.59	482.56	41.08

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STIPE
IUEP
            5.
IND1
IND2
XMIR
           -0.99E+U2+
                         LISTING OF INPUT DATA
XMAX
          -B.99E+U2+
                          NUP
                                  LUT
                                                 DATE
                                                               VEL HEAN
          -U.59E+U2+
AEMY
                                              05/07/1974
                                                                  473.675
                                LS-220-065
                            1
                                                                  480.375
                                LS-220-064
                                              65/13/19/4
         = -U.99E+ù2+
                            2
XAMY
                                              05/17/1974
                                                                  451.250
                            3
                                L5-220-V67
                                              05/17/1974
                                                                  480.500
                                LS-220-066
         = -0.99E+U2+
                            4
YBAR1
                                                                  461,000
                                              05/20/1974
                            5
                                LS-220-069
                                              US/26/1974
                                                                  482.250
         = -0.99£+02+
                            6
                                L5-220-068
YBAR2
                                              05/20/1974
                                                                  476.125
                            7
                                LS-220-071
                                                                  486.000
                                LS-220-072
                                              u5/30/1974
SEND
                            b
                                                                  477.500
                            9
                                L5-220-074
                                              ú6/13/1974
                                              06/10/1974
                                                                  479.500
                                LS-<20-075
                           10
                                                                  482.026
                           11
                                UL-U08-071
                                              06/19/1974
                                              U6/27/1974
                                                                  481.5CU
                                LS-220-075
                           12
                                                                  482.750
                                              07/01/1974
                           13
                                LS-220-077
                                              67/10/1574
                                                                  485.580
                           14
                                LS-220-075
                                                                  483.450
                                              07/19/1979
                           15
                                UL-U08-075
                                                                  462.145
                                              07/24/1974
                           16
                                LS-220-679
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                                              67/29/1974
                           17
                                LS-220-080
                                              10/09/1974
                                                                  485,833
                                LS-220-095
                            16
                                               11/07/19/4
                                                                  482.833
                                L5-220-102
                            19
                                                                  484.875
                           20
                                L5-220-101
                                               11/37/1974
                                                                  482.714
                            21
                                £54220+103
                                              11/12/1974
                                              11/12/1974
                                                                  480.625
                            22
                                LS-2200105
                                                                  476.571
                            23
                                L5-226-106
                                              11/15/1974
                                               11/15/1974
                                                                  486.225
                            24
                                UL-006-090
                                                                  483.395
                                UL-U06-089
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                            25
                                                                  485.657
                                               11/16/1974
                            26
                                L5-220-107
                                                                  487.641
                                               11/19/1974
                            27
                                UL-008-091
                                                                  484.250
                                               11/25/1974
                            26
                                L5-220-106
                                                                  465.625
                                               11/25/1974
                            29
                                L5-220-110
                                                                  491.410
                                UL-900-092
                                               11/26/1974
                            30
                                                                  489,625
                                               11/26/1974
                            31
                                UL-966-093
                            32
                                L5-220-109
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                                                                  481.000
                                               12/11/1974
                                                                  481.000
                            35
                                LS-220-111
                                LS-226-112
                                               12/12/1574
                                                                  460.167
                            54
                                CL-068-094
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                                                                  986.775
                            35
                                               12/15/1974
                                                                  490.275
                            36
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                                                                   479.375
                            57
                                L5-22U-114
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                                                                   480.875
                            3P
                                LS-220-113
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                                                                   460.375
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                                L5-220-115
                                               12/23/1974
                                                                   479.500
                            40
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                                               12/26/1974
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                                                                   480.143
                            42
                                LS-220-120
                                               U1/13/1975
                                                                   476.250
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44

u1/21/1975

480.429



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STIRE
TOEP
IND1
IND2
MINX
          -U.59E+02+
                          LISTING OF INPUT GATA
XMAX
        = -0.99£+02,
                           NUP
                                   LUT
                                                  DATE
                                                                VEL MEAN
                             1
                                LS-220-065
                                               ú5/U7/1974
                                                                   473,675
MINT
                             2
                                LS-220-064
            0.0.
                                               UD/13/19/4
                                                                   480.375
                             3
                                LS-228-067
                                               05/17/1974
                                                                   481.250
YMAX
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                             4
                                 LS-220-066
                                               05/17/1974
                                                                   480.566
                                LS-220-069
                                               05/20/1974
                                                                   481.000
                                LS-220-068
YBAR1
          -0.99£+02.
                             6
                                               05/28/1974
                                                                   482.250
                             7
                                LS-220-071
                                               05/26/1974
                                                                   476.125
YBAR2
        = -0.59£+02.
                             B
                                LS-220-072
                                               05/30/1974
                                                                   480.009
                             9
                                LS-220-674
                                               06/13/1974
                                                                   477.500
SENG
                            10
                                LS+220-075
                                               06/16/1974
                                                                   479.500
                            11
                                OL-006-071
                                               06/15/1974
                                                                   482.026
                            12
                                LS-220-076
                                               U6/27/1974
                                                                   481.500
                            13
                                L5-220-077
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                                                                   482.750
                            14
                                L5-220-076
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                                                                  455.500
                                UL-U06-075
                            15
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                                                                  453.450
                            16
                                LS-220-079
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                                                                  452.143
                            17
                                L5-220-060
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                                                                  486.667
                            18
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                            19
                                LS-220-102
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                                                                  452.835
                            26
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                                                                  484.875
                                LS-220-103
                            زع
                                               11/12/1974
                                                                  482.714
                            22
                                LS-220-105
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                                                                  480.625
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                                LS-220-166
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                           32
                                LS-220-109
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                           36
                                OL -605-095
                                              12/15/19/4
                                                                  490.275
                           57
                                LS-220-114
                                              12/17/14/4
                                                                  475.379
                           st
                                LS-220-113
                                              12/17/19/4
                                                                  450.875
                           59
                                L5-220-115
                                              12/23/1974
                                                                  486.375
                           40
                                15-226-116
                                              12/20/1974
                                                                  479.500
                                LS-220-117
                           41
                                              12/26/1979
                                                                  ÷77.675
                                L5-220-116
                           42
                                              12/27/1974
                                                                  466,143
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01/13/1975

61/21/1975

476,250

480.429

L5-220-120

L5-220-123

43

VEL 1640 100,133 500,700 63/17/1770 12-272-075 04/14/1970 04/19/1970 HANNING HANNING \*\*\*

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XMAX
        = -0.99E+02.
YMIN
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                              LS-220-064
YBAR1
            U.475E+U3+
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                              L5-220-067
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                              L5-220-066
YBAR2
            0.525E+03.
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                              LS-220-069
                                                                482.250
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                              LS-220-071
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                                             U5/3U/1974
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                               LS-220-072
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                                                                477.500
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                               LS-220-074
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                               OL-U08-071
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                               L5-220-07?
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                               UL-008-075
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                                                                 462,145
                                             u7/24/1974
                               LS-220-079
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                                                                 480.667
                                             U7/29/1974
                               LS-220-080
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                                                                 465.833
                                             10/05/1974
                           18
                               LS-220-095
                                                                 482.833
                                             11/07/1974
                           19
                               LS-22U-102
                                                                 484.875
                                             11/07/19/4
                           20
                               US-220-161
                                                                 482.714
                                             11/12/1974
                           21
                               LS-220-103
                                                                 460.625
                                              11/12/1974
                           22
                               LS-220-105
                                                                 476.571
                                              11/10/1974
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                               F2-550-20P
                                                                 486.225
                                              11/15/1974
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                               01-006-090
                                                                 463.395
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                               UL-408-089
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                                                                 485.857
                                              11/18/1974
                           -26
                               L'S-286-107
                                                                 487.641
                               UL-UCZ-691
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                           211
                                                                 484.250
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                               アマーベスのプリタ:
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                               US-24-710
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                                UL-408-095
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                                LS-220-11*
                                                                  460.875
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                                L5-420-113
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                           40
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                                              12/26/1974
                                L5-220-117
                            41
                                                                  460.143
                                              12/27/19/4
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                                                                  470.250
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                            43
                                LS-220-120
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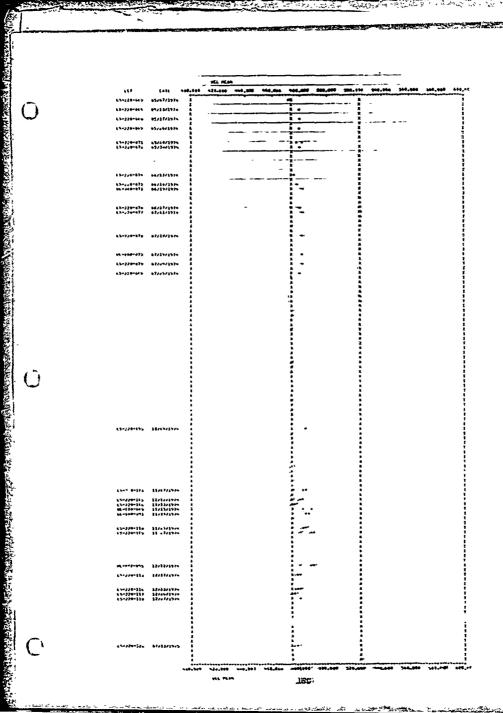
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US-226-123

01/21/19/5

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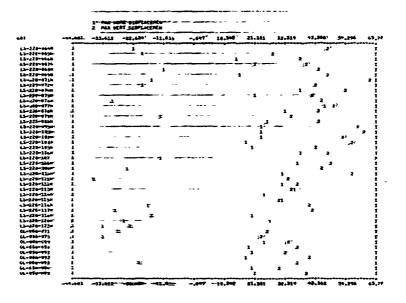
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                                                       28.560
      L5-226-0651.
                                                       38.027
      L5-226-066h
                               14.755
                                                       40.931
      LS-220-067k
                               21.396
                              -11.191
                                                       44.827
      LS-220-068F
                               16.716
                                                       46.031
      L5-226-069r
                              -15.100
                                                       63.218
      LS-22U-U71K
                               -15.117
                                                       43.882
      L5-220-672h
      LS-220-074k
                               36.470
                                                       54.346
                               21.757
                                                       43.167
  10
      L5-226-075h
                               -27-296
                                                       46.292
  11
     L3-220-076r
                                                       50,443
  12
     L5-220-077h
                                46.794
                                32.638
                                                       44.428
 13
     L5-220-07:k
                                                       34.579
                               -12.694
 14
      LS-220-075k
                                                       44.920
  15
      L5-220-006h
                               26.569
                               24,476
                                                       :18.615
  16
      レンーととひーひりしゃ
      LS-226-101K
                                24,058
                                                       61.059
  17
                                                       53.291
  16
      L5-220-102h
                                23,569
                                16.595
                                                       57.009
  19
      L5-220-105F
                                26,401
                                                       44.138
  ۵5
     L5-20-105h
  21
      L5-220-10of
                                50.405
                                                       47.589
                                                       65.285
                               -12.304
  22
      L5-22G-107
                               37.009
                                                       48.868
  23
      L5-220-108F
      LS-226-105h
                               -25.795
                                                       46.277
  24
                                                       56.598
  25 LS-220-110F
                                32.135
                               -36.641
                                                       33.868
  2ŧ
      L5-220-111h
                                31.251
                                                       37.-233
  27
     L5-220-112k
                                                       35.596
      L3-220-113h
                                35.966
  26
                                25.286
                                                      -44-601
  29
      LS-220-114k
                                                       30.457
  30 LS-220-115k
                                31,448
                                                       41.252
      L5-220-116K
                               -16.862
  31
                               -26.856
                                                       43.100
  52
      L5-220-117F
  33
      L5-220-116k
                                20.627
                                                      -15-268
                                                      -25.481
                                27.661
  54
      LS-226-120h
                                                      -22.905
                               -33.235
  35
      L5-220-123K
                               -26.100
                                                       25.227
  36
      UL-UU6-U71
                                                       24.047
  37
      UL-U06-U75
                               -52.651
                                                       33.672
                                25.083
      0L-000-085
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                                15.352
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## HISTOGRAM SURMARY

VEL MEAN

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i	. 1	*******	4/3.874	U	0.00	Ú	% 0.00
١	2	473.07=	4/5.620	1	2.27	1	2.27
į	3	475.625	477.501	1	2.27	2	4,55
1	4	477.582	479.135	4	9.09	6	13.64
1	5	474.136	480.866	13	29.55	19	43.10
	£	480.869	482.642	8	10.18	27	61.36
	7	462.643	404.595	ь	10,18	<b>3</b> 5	79,55
į	e,	464.396	486.145	3	6.82	36	86.30
	4	466.150	407.902	1	2.27	39	88.64
1	10	487.903	489.656	3	6.82	42	95.45
į	11	489.657	491.409	1	2,27	43	97.73
1	12	491.410	********	1	2.27	44	100.00
1							1

VEL REAN

STABLE

1TABLE

1.30

SEND

## NOREAL DISTRIBUTION

A1 = AREA UNDER CURVE FROM U TO (X-U)/S AZ = AREA IN BOTH TAILS FROM -INF TO (X-U)/S AND (X-U)/S TC +1"F X = KANDUM VARIATLE U = FEAN VALUE OF X S = STANGARU LEVIATION OF X HO = RELATIVE FREQUENCY IN TERMS OF MEAN FREQUENCY **SA** (X-U)/S 1.0000 1.0000 0.0000 0.00 .9602 .9986 .0199 .05 .9950 .9203 .0398 .10 .8608 .9888 .0590 .15 .9602 .8415 .0753 .20 .9692 .6026 .0967 .25 .9560 .7642 .1179 .30 .9405 .7263 .1368 .35 .9231 .1554 .6892 .40 .6527 .9037 .1736 .45 .6171 .8825 .1915 .50 .8596 .5023 .55 .2008 .5485 .8353 .2257 .60 .5157 .6096 .2422 .65 .7827 .4659 .2560 .70 .7548 .4533 .75 .2734 .7262 .4237 .2861 .80 .3953 .6968 .3025 .85 .6670 .3681 .3157 .90 -6368 .3421 . 3289 .95 .6065 .3173 .3415 1.00 .5762 .2938 .3531 1.05 ,5461 .2714 .3645 1.10 .5162 .2502 .3749 1.15 .2502 .4868 .3849 1.20 .4578 .2113 .3944 1.25 .4296 .1736 .4032

1.35	.4115	.1771	.4020
1.40	.4192	.1616	•3753
1.45	.4265	.1470	• 3495
1.50	.4532	.1336	.3247
1.55	.4394	.1212	.3008
1.60	.4452	.1096	.2760
1,65	.4505	.0990	-2563
1.70	.4554	.0892	.2376
1.75	.4599	.0802	.2163
1.80	.4641	.0720	.1979
1.85	.4678	.0644	.1886
1.90	.4713	.0574	.1645
1.95	.4744	.0512	•1494
2.00	.4772	.0455	.1353
2.05	.4798	.0464	.1223
2.10	.4621	•0358	.1040
2.15	4842	.0516	•0992
2.20	.4861	.027ô	.0890
2.25	.4678	.0244	.0796
2.30	.4895	.0214	.0709
2.35	.4906	.0186	.0632
2.40	.4918	.0164	.0561
2.45	.4523	.0143	.0497
2.50	.4936	.0124	.0439
2.55	.4946	.0108	.0387
2.60	.4953	.0093	.0341
2.65	.496ů	.0060	.0299
2.70	.4965	•0076	.0261
2.75	.497U	•0860	• 3228
2.00	.4974	.0051	.0198
2.85	.4978	.0044	.0172
2.90	.4961	.0037	.0150
2.95	.4964	.0032	.0129
3.00	.4987	.0027	.0111

¢v\*\*\*\*\*\*\*\*\*\*\*\*\* PRUGHSM FINISHED